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System Generation and Installation Guide

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PREFACE

MANUAL OBJECTIVES

The goal of this manual is to provide you with the information necessary to successfully generate an RSX-11M operating system. Included in this manual are conceptual descriptions of the system generation procedure (SYSGEN), detailed information on how to use the distribution media to generate your RSX-11M system, and an explanation of each of the SYSGEN questions.

INTENDED AUDIENCE

This manual is primarily directed toward system managers (that is, those responsible for tailoring and maintaining RSX-11M systems). Although RSX-11M V4.1 provides options that can make the system generation procedure considerably easier, most of the information in this manual requires the reader to be familiar with RSX-11M and its component tasks.

STRUCTURE OF THIS DOCUMENT

This document details several major enhancements to the system generation procedure. Before you begin generating your RSX-11M system, carefully read Chapter 3.

Chapter 1 is a general introduction to RSX-11M system generation and installation.

Chapter 2 is a description of the RSX-11M distribution media. It also contains step-by-step instructions for copying the magnetic tape and disk media.

Chapter 3 is a conceptual discussion of the RSX-11M system generation procedure. It describes the structure of SYSGEN as well as specific SYSGEN options that make it easier to generate your system.

Chapter 4 explains each of the questions in SYSGEN Phase I.

Chapter 5 explains each of the questions in SYSGEN Phase II.

Chapter 6 describes the various procedures that you should follow after you have generated your system.

Chapter 7 explains each of the questions in SYSGEN Phase III.

Chapter 8 supplies explanations of the various system error messages.

Appendix A defines the saved answer symbols which SYSGEN creates based on your responses to questions.

Appendix B provides information for hardware bootstrapping your PDP-11 processor.

Appendix C is a table of devices and the associated device mnemonics and controllers.

Appendix D is a list of the tasks and system functions impacting the Dynamic Storage Region (DSR), also known as pool space.

Appendix E contains detailed information on floating Control Status Register (CSR) and vector addresses, and defines the DIGITAL standard hardware configuration algorithm.

Appendix F is a directory listing of specific contents of each volume of the distribution kits.

ASSOCIATED DOCUMENTS

The RSX-11M Documentation Directory briefly describes all of the manuals in the RSX-11M documentation set and provides a brief synopsis of the contents of each manual. The following lists those manuals most closely associated to the purposes of this document.

RSX-11M/M-PLUS System Management Guide

RSX-11M/M-PLUS Executive Reference Manual

RSX-11M/M-PLUS MCR Operations Manual

RSX-11M/M-PLUS I/O Drivers Reference Manual

RSX-11M/M-PLUS Task Builder Manual

CONVENTIONS USED IN THIS DOCUMENT

The following conventions are used in this manual:

Convention	Meaning
Red Ink	In examples of commands you enter and system responses, all output lines and prompting characters that the system prints or displays are shown in black letters. All the lines you type are shown in red letters.
CTRL/x	The symbol CTRL/x indicates that you must press the key labeled CTRL while you simultaneously press another key, for example, CTRL/C, CTRL/O, CTRL/Y.
❶	A reverse number is a white number printed in a black circle. These numbers key a part of an example to the text that explains that part of the example. The reverse number appears both in the example and the explanation.

SUMMARY OF TECHNICAL CHANGES

The following new options and features have been added to the RSX-11M system generation and installation procedure:

- SYSGEN must be performed on a mapped host system with at least 64K words of memory.
- SYSGEN no longer supports the RK05 distribution kit.
- SYSGEN now supports SPM-11M.
- SYSGEN now supports RA60 removable media and RA81 fixed media under the UDA50 hardware controller.
- SYSGEN now supports RC25 fixed/removable media.
- SYSGEN now supports RD51 fixed media and RX50 floppy disk drives under the RQDX1 hardware controller.
- SYSGEN now supports TSV05 and TU80 magnetic tape drives under the TS11 hardware controller.
- SYSGEN now supports the LN01, LP07, LP26, and LP27 line printers under the LP11 hardware controller.
- SYSGEN now supports the DHV11 hardware controller.
- The distribution kits now only contain a mapped baseline system.
- The default for the target system configuration is now mapped.
- SYSGEN will always install the V4.1 TKB from the distribution kit with the task name ...TKL.
- SYSGEN now allows DU devices (RA60, RC25, and RX50 only) to be chosen as the crash dump device.
- In an RL01/02 PREPGEN, the EXCPRV disk is mounted by SYSGEN.
- The RSX-11M magnetic tape distribution kits are now in BRU format. Also, BRU is now used to copy all the RSX-11M V4.1 distribution kits.
- RMS-11 V2.0 is now included in the RSX-11M V4.1 distribution kit.

CHAPTER 1

INTRODUCTION

The RSX-11M system generation procedure (SYSGEN) offers the flexibility, through selection of specific hardware and software options, to produce an RSX-11M system specifically tailored to the requirements of a given user environment.

1.1 WHO IS QUALIFIED TO GENERATE AN RSX-11M SYSTEM?

Generating RSX-11M requires a fairly sophisticated understanding of the operating system. If you have never generated an RSX-11M system, you may find the system generation procedure overwhelming. There is a lot to know and decide. For example, when selecting SYSGEN options, you should be familiar with the trade-offs between memory and pool (pool and other terms are defined in Section 1.6). Some information concerning the amount of memory used by specific options is present in this manual. However, because hardware and software options can be combined in so many different ways, it is impossible to prescribe a simple formula to satisfy any given situation. Therefore, the task of generating an RSX-11M system is generally reserved for system managers, system programmers, and that general class of user with sufficient understanding of the operating system to make the necessary judgements.

1.2 SYSTEM GENERATION MINIMUM REQUIREMENTS

In order for you to perform an RSX-11M V4.1 SYSGEN, your host system has to conform to two SYSGEN minimum requirements:

- Your host system must be mapped. That is, your host system must support memory management hardware.
- Your host system must have at least 64K words of memory.

1.3 PLANNING AHEAD

Before beginning the system generation procedure, you should spend some time planning for it. Read through the manual (in particular, Chapters 3 and 4) to familiarize yourself with the options you want. Be sure that the options you select are compatible and that they make sense; make sure that your hardware supports adequate memory to accommodate the operating system you generate.

Careful planning before you generate your system allows you to go through the procedure more quickly and easily.

Calculations for things such as disk swapping intervals, round-robin scheduling intervals, and swapping priorities require some experimenting with the system. If you are generating an RSX-11M system for the first time, you may find such calculations difficult to make. However, each option comes with a default response that you may select (see Chapter 3 for further explanation). Selecting the default response allows you to postpone or avoid calculations such as those mentioned above, until it can be determined that the defaults are inappropriate for your system.

For example, you should determine the amount of pool space required for your system. Without enough pool the system response time may be slow; with too much pool, you may be wasting valuable memory. Appendix D may help you to make those calculations. By default, SYSGEN allocates the maximum amount of pool space available to a mapped system after you have selected all the hardware and software options. Therefore, you may decide to let SYSGEN calculate your pool size and wait until you have time to experiment with your new system before making any adjustments.

1.4 EXPERIMENT WITH YOUR NEW SYSTEM

The first system you generate may not be optimal for your specific needs. Experiment with it to see how it performs. You may find it necessary to make some adjustments by adding memory or reducing options. All of this can be done gradually as you become more familiar with your system and understand how various system features affect one another.

1.5 EASE-OF-USE FEATURES

Some RSX-11M users may want to generate their system as quickly and easily as possible and attend to system tuning adjustments afterward. The RSX-11M V4.1 system generation procedure contains two options that can ease your involvement in the system generation procedure and minimize the number of questions you must answer.

- The Autoconfigure option automatically determines your hardware configuration, and can eliminate the need to answer most or all of the SYSGEN questions concerning your target configuration and peripheral devices.

- The Standard Function System option produces a mapped RSX-11M operating system with the maximum number of software options, including support for layered products.

Further information on the Standard Function System and Autoconfigure can be found in Chapters 3 and 4.

1.6 OVERVIEW OF SYSGEN

There are three phases to SYSGEN. Phase I requires you to select the hardware and software options for your target system. That information is then used to assemble the Executive, device drivers, and other parts of the system.

Phase II is dedicated to task building, or linking, your Executive, device drivers, privileged and system tasks, and creating a system image file.

Phase III is dedicated to task building selected privileged and nonprivileged tasks.

SYSGEN questions appear on your terminal based upon how you answer the preceding SYSGEN questions; they do not appear in strict numeric order.

Also, the three phases of SYSGEN are not completely independent from one another. For example, although you may invoke Phase III of SYSGEN without having to go through an entire system generation, you cannot invoke Phase II without having gone through Phase I. Phase II requires input created during Phase I. Read Chapter 3 for more information on the structure and concepts of SYSGEN.

1.7 SYSGEN TERMINOLOGY

This section defines some terms used in this manual. The purpose of defining these terms here is to familiarize you with them before you begin generating your RSX-11M system. For more information on a given term consult the RSX-11M Information Directory and Master Index.

Executive

The Executive is the software core, or kernel, of the RSX-11M operating system. It is responsible for controlling such activities as resource allocation, multi-user protection, and inter-task communications. In general the Executive monitors, controls, and services system level activity. It provides a relatively machine independent environment in which to develop and run user applications.

The Executive resides in low memory. On systems supporting the memory management option, the Executive is permanently mapped by the KERNEL mode mapping registers ranging from KERNEL virtual address 0 up to KERNEL virtual address 120000(8). The Executive's permanently mapped address space contains the Executive code, the I/O device data base, and the system pool.

pool

Pool (also known as the Dynamic Storage Region, or DSR) is a contiguous area in memory, allocated by the Executive and used as a work space for storing system data structures such as system lists and control blocks. Pool is included at the top of the Executive's permanently mapped address space in memory. The size of pool must be sufficient to handle all of the dynamic storage requests of the system. By default, SYSGEN extends the mapped system Executive to its maximum size to create the largest possible pool space.

FCS (File Control Services)

FCS is a set of routines that can be used in tasks to read and write files. FCS provides a set of macros to simplify the user interface to the system I/O structures. The FCS routines serve as an intermediary between tasks and an ACP or a device driver.

Task input to FCS is in the form of data structures and calls to the FCS subroutines. The output from FCS is QIO directives for an ACP or device driver to process. FCS provides a convenient and device independent interface for a task, rather than having the task issue QIOs directly.

ACP (Ancillary Control Processor)

An Ancillary Control Processor (ACP) is a privileged program interfacing between a device driver and the Executive or a user program. An ACP acts as part of the I/O processing for a particular device or group of devices and is commonly requested to process an I/O request that must be translated to one or more simpler I/O requests that a device driver can process. The main difference between an ACP and a device driver is that an ACP services a class of devices (such as disks), where a driver services a specific device type (such as RL02s). An ACP becomes associated with a device through either a MOUNT command or by some other special, privileged interface associated with the ACP.

Files-11 ACP

Files-11 ACP is a special ACP supplied with RSX-11M that, like other ACPs, becomes associated with a device or devices by the MOUNT command. Once associated with the device, it intercepts certain I/O requests issued by programs as determined necessary by the I/O system in the Executive. In particular, the Files-11 ACP handles requests to create files, to extend files, to delete unneeded files, and to access files. Files-11 ACP is responsible for the maintenance of the volume structure of a Files-11 disk, including the directory structure, storage allocation and deallocation, and file security.

driver

A driver is a set of routines called by in the Executive in response to I/O requests from user programs. One of those routines is the interrupt service routine, whose specific function is to service device interrupts. (See the definition of a vector.) The driver translates I/O requests into instructions directed to a specific device type. A driver is actually an extension of the Executive; it provides the software interface between a user and the device itself.

Each type of peripheral device has its own driver. Because driver code may take substantial space in memory, you have the option in SYSGEN to make specific drivers memory resident or loadable. Refer to the RSX-11M Guide to Writing an I/O Driver for a full discussion of drivers.

CSR (Control and Status Register)

Every peripheral device has a unique address on the communication bus (UNIBUS or QBUS). When addressing a device, you are actually addressing a set of registers that communicate with the device. One of the registers is called the CSR.

interrupt

An interrupt is the mechanism whereby the various external hardware subsystems communicate a need for software servicing.

vector

Every device corresponds, through the system hardware, to a unique two-word location in the low end of memory called a vector. (The memory locations from 0 through 776 are the vector areas.) Each vector stores the PS (processor status word) and PC (program counter) of the interrupt service routine for a specific

device. When a device interrupts the CPU, the CPU saves the current PS and PC on a stack and loads the PS and PC from the device's vector. The address in the new PC points to the interrupt service routine.

Not all vectors are assigned to peripheral devices. Some are reserved for software interrupts. For instance, execution of the TRAP instruction causes an interrupt where a new PS and PC are loaded from the vector reserved for use only by the TRAP instruction.

In addition, there are what is known as "floating vectors." Floating vectors are those addresses from location 300 through location 776. The assignment of devices to those vectors is left to the discretion of the system manager and the field service representative. Generally, floating vectors are used for assigning multiple devices of a given type that require more than one controller.

hardware bootstrap

A hardware bootstrap is a process whereby a user initiates a software (RSX-11M) system startup by using the console switches and/or the console terminal to instruct the bootstrap ROM to load the hardware bootblock record from an input device into memory. The bootblock record contains the code to load the system image into memory.

software bootstrap

A software bootstrap is a process whereby a privileged user initiates a new software system startup from an already running system. Software bootstrapping requires the use of the MCR BOO command. (See the RSX-11M/M-PLUS MCR Operations Manual, particularly the SAVE and BOOT commands, for details on software bootstrapping.) Any valid RSX-11M system image can be software bootstrapped.

mapped system

PDP-11 processors supporting memory management hardware are known as mapped systems. That is, the memory management hardware converts virtual addresses to physical addresses in memory. In addition the memory management hardware makes it possible to access and address more memory by mapping 16-bit addresses to virtual 16-bit, 18-bit, or 22-bit locations. For contrast, see the definition of an unmapped system.

unmapped system

An unmapped system is a system on which a virtual address corresponds exactly to a physical address. For example, the virtual address 125003 corresponds to the physical location 125003 in memory. Unmapped systems support up to 30K words of memory, with 2K words left over to map the I/O page -- the extent of 16-bit addressing.

baseline system

The baseline system is the stand-alone RSX-11M system included as part of the distribution kit. It contains only those software components necessary for you to generate an RSX-11M system.

target system

The term target system refers to the operating system produced by the system generation procedure as well as the hardware configuration on which it is intended to run. System generation may take place on the target system computer or on a different computer (see "host system"). In either case, RSX-11M system generation must be done using a PDP-11 processor.

host system

The host system is that system on which you perform an RSX-11M system generation. It may be the same hardware on which you intend to run your new target system, or it may be a separate configuration that is more convenient for system generation.

on-line system

An on-line system is an operating environment that shares resources with other processing or development work in progress. In the context of SYSGEN, generating RSX-11M on line means that you are using host system software other than the baseline system provided on the distribution kit.

stand-alone system

A stand-alone system is an operating environment that is dedicated to a single activity. In the context of SYSGEN, generating RSX-11M stand alone means that you are using the baseline system provided on the distribution kit.

virgin system

The term virgin system refers to the state of the system image after VMR has executed SYSVMR.CMD and before the system has been saved. (Refer to the SAVE command in the RSX-11M/M-PLUS MCR Operations Manual.) The virgin system should only be bootstrapped on the target system that it was configured for during the system generation process.

CHAPTER 2

GUIDE TO COPYING THE DISTRIBUTION KITS

This chapter is a discussion of the distribution kits containing RSX-11M Version 4.1. It describes each type of kit and how to use it to prepare for the system generation procedure.

2.1 WHAT IS A DISTRIBUTION KIT?

RSX-11M distribution kits are the magnetic tape or disk media containing the source, object, task, and command files needed to generate your RSX-11M system. There are four general types of distribution kits:

- Big disk tape distribution kits
- RC25 disk distribution kits
- RK06/07 distribution kits
- RL01/02 distribution kits

The term "big disk" distribution kit applies to all distribution kits (tape only) that are supported on a single-disk volume (RP04/05/06, RM02/03/05, RM80/RP07, and RA60/80/81/RC25).

Table 2-1 describes each type of kit. Included in the table are the number of magnetic tapes or disk volumes for each separate kit. Each distribution kit contains either magnetic tapes or disks, depending on the type of kit ordered.

Check the contents of your distribution kit against the information in Table 2-1 to ensure that you have a complete kit.

Each distribution kit contains an RSX-11M operating system known as the "baseline system." The baseline system contains just enough features to allow you to perform a system generation. There is a mapped baseline system (on disk volume or magnetic tape backup set RSX[illegible]5) on each kit in UFD [1,54].

Regardless of whether your distribution kit is on magnetic tape or disk, you can use only disk media to perform an RSX-11M system generation.

Table 2-1
Inventory of the Six RSX-11M Distribution Kits

Kit Type	Backup Set Names	Number of Disks[1]	Number of Tapes[2]	Tape Length	Tape Density
RP04/05/06	RSXM35	-	1	2400 ft	1600 bpi
			2	2400 ft	800 bpi
RM02/03/05 RM80/RP07	RSXM35	-	1	2400 ft	1600 bpi
			2	2400 ft	800 bpi
RA60/80/81 RC25	RSXM35	-	1	2400 ft	1600 bpi
			2	2400 ft	800 bpi
RC25	RSXM35	1	-	-	-
RK06/07	RSXM35	2	1	2400 ft	1600 bpi
	CLISRC		2	2400 ft	800 bpi
RL01/02	RSXM35	6	1	2400 ft	1600 bpi
	EXCPRV		2	2400 ft	800 bpi
	RLUTIL				
	MCRSRC				
	HLPDCL				
	RMSV20				

1. Except for the RC25 disk distribution kit, the big disk distribution kits are distributed on magnetic tape only.

2. Each tape distribution kit also includes a stand-alone BRU tape. (See Section 2.3.)

Each volume in your distribution kit bears a physical label identifying the following:

- The specific software version number (such as RSX-11M V4.1)
- The type of distribution kit (such as RL1/2)

NOTE

Because of character string limitations on the physical tape label, the type of distribution kit specified on the label omits zeroes. The RL01/02 kit is represented as RL1/2, and so forth.

- The volume ID (such as RSXM35)
- The number in the sequence (such as 1/2 -- the first disk in a set of two)
- Additional information for tape that specifies the file format (such as BRU) and the tape density (such as MT:1600)

Figure 2-1 shows an example of an external, physical magnetic tape label and an external, physical disk label for the RSX-11M V4.1 distribution kits.

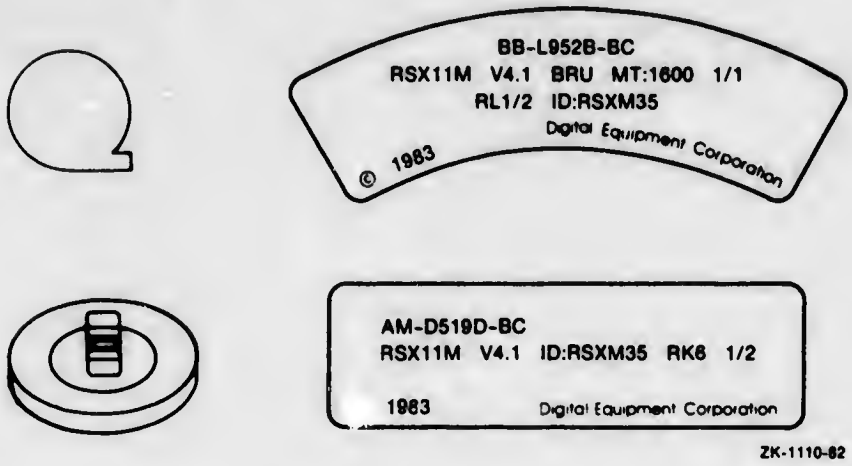

Figure 2-1 Examples of External Labels
for RSX-11M Magnetic Tapes and Disks

2.2 OPERATING ENVIRONMENTS FOR GENERATING RSX-11M

To perform an RSX-11M system generation, you must have an operating system to control the host computer's resources. (The host computer is the computer on which you are generating your new RSX-11M system.)

2.2.1 Stand-Alone System Generation

You may generate your system by using an RSX-11M V4.1 baseline system. This is known as a "stand-alone" system generation. The process requires that you hardware bootstrap the baseline disk (RSXM35) to load the baseline system into memory. Further information on stand-alone system generation appears in Chapter 4.

2.2.2 On-Line System Generation

You may generate your system by using a host computer that is currently running an RSX-11M V4.0 or V4.1 system other than the baseline system. This is known as an "on-line" system generation. This procedure requires specific logical device assignments before you begin the system generation. Further information on on-line system generation appears in Chapter 4.

2.3 COPYING THE DISTRIBUTION KIT

Before you use your distribution kit to generate an RSX-11M system, first make a copy of the kit. The original distribution kit then serves as a backup in case anything should happen to corrupt the contents of the distribution kit copy during the system generation process. The distribution kit also serves as base software against which you can apply subsequent Autopatch updates. (If you need to apply an Autopatch to your system or to layered products, you should do it before invoking SYSGEN Phase I.)

If you have a magnetic tape distribution kit, you must copy the distribution kit to a blank disk that will be your target system disk.

Since you must copy a magnetic tape distribution kit to disk before invoking SYSGEN, the distribution tape may serve as the permanent backup copy.

If you have a disk distribution kit, you must make a copy of the distribution kit that you can use as the target system disk.

Details for copying each particular distribution kit appear in each of the following sections. Section 2.3.1 tells you how to copy any of the distribution kits stand-alone using the BRU64K and baseline stand-alone systems. Section 2.3.2 tells you how to copy any of the distribution kits using a host computer already running RSX-11M. Find the section that applies to your distribution kit and follow the instructions for copying the kit.

2.3.1 Copying Kits Stand-Alone

The following sections describe the procedures used to copy each type of distribution kit using the BRU64K and baseline stand-alone systems.

2.3.1.1 The BRU64K System - Each tape distribution kit includes a 600-ft tape labelled BRU64K. The BRU64K system is a limited-feature, memory-resident RSX-11S system. It is used only to prepare the target system disk and to copy the magnetic tape distribution kit. The baseline system contained on the target system disk is used as the operating environment for stand-alone system generations.

Included with the BRU64K system are copies of the following utilities:

- Backup and Restore Utility (BRU)
- Bad Block Locator Utility (BAD)

NOTE

Since BRU and BAD share the same buffer space, the two utilites cannot be run simultaneously.

Also included is a special-purpose configuration program called the RSX-11M/M-PLUS Stand-Alone Configuration and Disk Sizing Program (CNF). CNF allows you to change the default device CSR (/CSR=nnnnnn), the default device vector (/VEC=nnn), and the default formatter number for MF:- and MM:-type magnetic tape devices (/FOR=n) in the BRU64K system. The BRU64K system expects your devices to be at the following CSR and vector addresses:

Device	Formatter Number	CSR	Vector
DB		176700	254
DK		177404	220
DL		177440	160

Device	Formatter Number	CSR	Vector
DM		177440	210
DP		176714	300
DR		176300	150
DU		172150	154
MF	0	175400	260
MM	0	172440	224
MS		172522	330
MT		172522	320

If your devices are at different CSR and vector addresses or if your MF:- or MM:-type magnetic tape drive device is on a different formatter number, you must change the values in BRU64K. You can do this by using the following CNF switches when you enter the device name:

```
/CSR=csr address
/VEC=vector address
/FOR=formatter number
```

The vector addresses that BRU64K expects for DR, MS, and MT are nonstandard. The CSR address that BRU64K expects for DR is also nonstandard. If you are using one of these devices as an input or output device, you will always have to change the values in BRU64K to match the CSR and vector addresses of your hardware. You can enter the standard values for these devices by using the following responses to the CNF prompt:

```
DR:/CSR=176700/VEC=254
MS:/VEC=224
MT:/VEC=224
```

To begin copying your distribution kit, you must hardware bootstrap the BRU64K stand-alone system on your host computer. The procedure for hardware bootstrapping the BRU64K system depends on the bootstrap hardware present on the host computer.

If you have an **big disk magnetic tape kit**, read Section 2.3.1.2 next.

If you have an **RC25 Disk kit**, read Section 2.3.1.3 next.

If you have an **RK06/07 1600 bpi magnetic tape kit**, read Section 2.3.1.4 next.

If you have an **RK06/07 800 bpi magnetic tape kit**, read Section 2.3.1.5 next.

If you have an **RK06/07 disk kit**, read Section 2.3.1.6 next.

If you have an **RL01/02 1600 bpi magnetic tape kit**, read Section 2.3.1.7 next.

If you have an **RL01/02 800 bpi magnetic tape kit**, read Section 2.3.1.8 next.

If you have an **RL01/02 disk kit**, read Section 2.3.1.9 next.

2.3.1.2 Copying the Big Disk Magnetic Tape Kit Stand-Alone - Use the following procedure to copy either the 800 bpi or 1600 bpi magnetic tape kits using a host computer stand alone. The output disk referred to in this section is the blank disk you intend to use as the target system disk. All commands shown in this section are issued to the RSX-11S basic MCR command line interpreter.

You will need one scratch disk to copy the distribution kit. This will be your system disk after your system generation is complete. (Place a physical label on the disk so that the scratch disk represents the backup set name in the distribution kit.)

To copy your distribution tape(s) to disk using a stand-alone host system, perform the following steps:

NOTE

If you have a 1600 bpi kit, you need only perform the first seven steps.

1. Load the BRU64K tape on the appropriate tape drive. Load the scratch disk, which you have previously physically labelled RSXM35, in the appropriate disk drive and spin up the disk. If your big disk medium is either the RA80 or the RA81 disk (both fixed-media disks) or the fixed-media portion of the RC25, the fixed-media disk serves as the scratch disk.

2. Hardware bootstrap the BRU64K tape (see Appendix B for the information regarding hardware bootstrap routines). The RSX-11S stand-alone system prints an identification line on your terminal, then begins to run the Stand-Alone Configuration and Disk Sizing Program (CNF).

3. Enter the device specifications in response to the prompts from CNF. The "first device" is the tape drive that will contain the RSX-11M V4.1 distribution kit; the "second device" is the drive containing the output disk.

   If the magnetic tape controller or the disk controller, or both, are not connected to CSR and vector addresses that BRU64K expects, you must modify the software to incorporate the correct addresses before you can complete this step. If you wish to check your CSRs and vectors against the list of default CSR and vector addresses, enter the /DEV switch in response to the first CNF prompt. For example:

```
Enter first device:/DEV

Device          CSR         Vector      CSR Status

DB              176700        254        Present
DK              177404        220        Not Present
  .
  .
  .
```

   If your devices are at CSR and vector addresses other than those that BRU64K expects, or if your MF:- or MM:-type magnetic tape drive is on a formatter number other than zero, you must change the values in BRU64K. Do this by using the following CNF switches when you enter the device name:

```
/CSR=csr address
/VEC=vector address
/FOR=formatter number
```

The vector addresses that BRU64K expects for DR, MS, and MT devices are nonstandard. The CSR address that BRU64K expects for DR-type devices is also nonstandard. If you are using one of these devices as an input or output device, change the values in BRU64K to match the CSR and vector addresses of your hardware.

For example, assume you have a TU16 magnetic tape with the default addresses, and an RM02 disk at standard CSR and vector addresses of 176700 (octal) and 254 (octal), respectively. Assuming that the unit number for both units is zero, the following is the sequence of commands to CNF:

```
Enter first device:MM0:

Enter second device:DR0:/CSR=176700/VEC=254
```

4. Press RETURN, then enter the date and time using the TIM command. Use the TIM command again to verify that you entered the correct date and time. For example:

```
Hit RETURN and enter date and time as 'TIM HH:MM MM/DD/YY'

>TIM 14:32 05/25/83
>TIM
14:32:01 25-MAY-83
>
```

5. Run the Bad Block Locator Utility (BAD) on your output disk. For example, if your output device is DR0:, use the following command sequence:

```
>RUN BAD
>
BAD> DR0:/LIST
BAD -- DR0: Total bad blocks= 0.
BAD> CTRL Z
>
```

The BAD /LIST switch lists any bad blocks as they are located.

6. Remove the BRU64K tape from the tape drive and mount the distribution kit tape labelled RSXM35 on the tape drive previously entered to CNF.

7. Run the Backup and Restore Utility (BRU) to copy the backup set on the distribution kit tape to the disk.

For example, to copy the distribution tape (labelled RSXM35 and 1/2 if it is an 800 bpi tape kit) mounted on a TU16 magnetic tape drive to an RM02 disk, enter the following command to BRU:

```
>RUN BRU
>
BRU>/BAC:RSXM35/INI/REW/DEN:1600/VER (1600 bpi tape)
BRU>/BAC:RSXM35/INI/REW/DEN:800/VER (800 bpi tape)
From:    MM0:
To:      DR0:

BRU - Starting Tape 1 on MM0:
```

The BRU /BAC (backup set) switch specifies the backup set to be copied.

The BRU /INI (initialize) switch initializes the disk volume to which BRU is copying.

The BRU /REW (rewind) switch ensures that the tape is completely rewound before BRU begins to copy.

The BRU /DEN (density) switch specifies the density (bpi) at which the tape was written.

The BRU /VER (verify) switch causes BRU to verify the data after it is copied. BRU issues the following messages to the terminal indicating that it has begun to verify the data copied:

```
BRU - End of Tape 1 on MM0:
BRU - Starting verify pass Tape 1 on MM0:
```

NOTE

If the verify fails, do not attempt the system generation without first retrying the backup operation. If the verify fails again, retry the backup operation using a new output disk. If the verify fails once again, it is likely that either your distribution kit is defective and should be replaced or your hardware needs to be checked.

When the tape is successfully copied and verified, BRU issues the following messages:

```
BRU - End of Tape 1 on MM0:
BRU - Completed
```

8. If your distribution kit contains two 800 bpi tapes, remove the first distribution tape from the drive and replace it with the second distribution tape (labelled 2/2) when requested by BRU:

```
BRU - Mount Tape 2 on MM0:
```

9. When you have loaded the second tape, put the magnetic tape drive on line. BRU will proceed to copy the second tape and issue the following message:

```
BRU - Starting Tape 2 on MM0:
```

This message indicates that BRU has begun copying the contents of the second distribution tape to disk. (BRU also verifies the second reel.) When the tape has been successfully copied, BRU returns the following messages indicating that it has finished:

```
BRU - End of Tape 2 on MM0:
BRU - Starting verify pass Tape 2 on MM0:
BRU - End of Tape 2 on MM0:
BRU - Completed
BRU> CTRL Z
>
```

You may then unload the second distribution tape.

At this point, you have completed the tape-to-disk copy and are ready to bootstrap the baseline system and begin generating your RSX-11M system. Refer to Appendix B for information on bootstrapping your distribution disk. Then turn to Chapter 3 for details on the structure of SYSGEN. It is important that you read Chapter 3 before you begin generating your system.

2.3.1.3 Copying the RC25 Disk Kit Stand-Alone - Use the following procedure to copy the RC25 disk kit using the host computer stand alone. The output disk or the scratch disk referred to in this section is the blank disk you intend to use as the target system disk. All commands are issued to the RSX-11S basic MCR command line interpreter.

You will need one scratch disk (presumably the fixed-media portion of the RC25 drive) to copy the disk distribution kit.

To copy the disk distribution kit using a stand-alone system, perform the following steps:

1. Load the disk labelled RSXM35 in the appropriate drive and spin up both the fixed-media and removable-media disks.

2. Determine the correct hardware bootstrap procedure for the disk drive on which RSXM35 is mounted. (See Appendix B for the information regarding hardware bootstrap routines.)

3. Bootstrap the baseline system on the RSXM35 disk by using the appropriate bootstrap routine for your processor and disk drive. When the baseline system comes up, it prints the following identification line on your terminal:

```
RSX-11M V4.1 BL35-A   124.K (BASELINE)

  .
  .
  .

>@ <EOF>
>
```

   At this point, system initialization is complete and you may proceed to step 4.

4. RSXM35 contains the BRU64K system that you need to copy the distribution kit. Therefore, software bootstrap the BRU64K system, which runs the RSX-11S stand-alone system. For example, if RSXM35 is in DU0:, enter the following commands:

```
>INS $BOO
>BOO DU0:[1,51]BRU64K
```

   Notice that you must first install the BOO (boot) task before software bootstrapping BRU64K.

NOTE

When copying the distribution disk, you should write-protect the disk from which you are copying data. To do this, press the write protect button on the front of the disk drive.

The RSX-11S stand-alone system prints an identification line on your terminal, then begins to run the Stand-Alone Configuration and Disk Sizing Program (CNF).

5. Enter the device specifications in response to the prompts from CNF. The "first device" is the drive containing the RSXM35 distribution kit disk; the "second device" is the drive containing the fixed-media output disk.

   If the disk controller is not connected to CSR and vector addresses that BRU64K expects, you must modify the software to incorporate the correct addresses before you can complete this step. If you wish to check your CSRs and vectors against the list of default CSR and vector addresses, enter the /DEV switch in response to the first CNF prompt. For example:

```
Enter first device:/DEV

Device        CSR        Vector     CSR Status

DB          176700        254       Present
DK          177404        220       Not Present
  .
  .
  .
```

   If your device is at CSR and vector addresses other than those that BRU64K expects, you must change the values in BRU64K. Do this by using the following CNF switches when you enter the device name:

```
/CSR=csr address
/VEC=vector address
/FOR=formatter number
```

6. Press RETURN, then enter the date and time using the TIM command. Use the TIM command again to verify that you entered the correct date and time. For example:

```
Hit RETURN and enter date and time as 'TIM HH:MM MM/DD/YY'

>TIM 14:32 05/25/83
>TIM
14:32:01 25-MAY-83
>
```

7. Run the Bad Block Locator Utility (BAD) on your output disk. For example, if your output device is DU1:, use the following command sequence:

```
>RUN BAD
>
BAD> DU1:/LIST
BAD -- DU1: Total bad blocks= 0.
BAD> CTRL Z
>
```

   The BAD /LIST switch lists any bad blocks as they are located.

8. Run the Backup and Restore Utility (BRU) to copy the distribution kit disk to the output disk.

```
>RUN BRU
>
BRU>/INI/VER
From:   DU0:
To:     DU1:
```

The BRU /INI (initialize) switch initializes the disk volume to which BRU is copying.

The BRU /VER (verify) switch causes BRU to verify the data after it is copied. BRU issues the following message to the terminal indicating that it has begun to verify the data copied:

```
BRU - Starting verify pass
```

NOTE

If the verify fails, do not attempt the system generation without first retrying the backup operation. If the verify fails again, retry the backup operation using a new output disk. If the verify fails once again, it is likely that either your distribution kit is defective and should be replaced or your hardware needs to be checked.

9. When RSXM35 is successfully copied, BRU issues the following message at your terminal to indicate that it has finished:

```
BRU - Completed
BRU>CTRL Z
>
```

Spin down the disks, replace the removable-media distribution disk with a scratch disk, and then spin up the disks again.

At this point, you have completed the disk-to-disk copy and are ready to bootstrap the baseline system and begin generating your RSX-11M system. Refer to Appendix B for information on bootstrapping your distribution disk. Then turn to Chapter 3 for details on the structure of SYSGEN. It is important that you read Chapter 3 before you begin generating your system.

2.3.1.4 Copying the RK06/07 1600 bpi Magnetic Tape Kit Stand-Alone - Use the following procedure to copy the 1600 bpi magnetic tape kit using the host computer stand alone. The output disk or the scratch disk referred to in this section is the blank disk you intend to use as the target system disk. All commands shown in this section are issued to the RSX-11S basic MCR command line interpreter.

You will need two scratch disks to copy the distribution tape. (Place a physical label on each disk so that the scratch disks represent the backup set names in the distribution kit.)

To copy your distribution tape to disk using a stand-alone system, perform the following steps:

1. Load the BRU64K tape and the output disk, physically labelled RSXM35, on the appropriate drives.

2. Hardware bootstrap the BRU64K tape (see Appendix B for the information regarding hardware bootstrap routines). The RSX-11S stand-alone system prints an identification line on your terminal, then begins to run the Stand-Alone Configuration and Disk Sizing Program (CNF).

3. Enter the device specifications in response to the prompts from CNF. The "first device" is the tape drive that will contain the distribution kit; the "second device" is the drive containing the output disk.

   If the magnetic tape controller or the disk controller, or both, are not connected to CSR and vector addresses that BRU64K expects, you must modify the software to incorporate the correct addresses before you can complete this step. If you wish to check your CSRs and vectors against the list of default CSR and vector addresses, enter the /DEV switch in response to the first CNF prompt. For example:

```
Enter first device:/DEV

Device          CSR         Vector      CSR Status

DB             176700        254        Present
DK             177404        220        Not Present
 .
 .
 .
```

   If your devices are at CSR and vector addresses other than those that BRU64K expects, or if your MF:- or MM:-type magnetic tape drive is on a formatter number other than zero, you must change the values in BRU64K. Do this by using the following CNF switches when you enter the device name:

```
/CSR=csr address
/VEC=vector address
/FOR=formatter number
```

   The vector addresses that BRU64K expects for DR, MS, and MT devices are nonstandard. The CSR address that BRU64K expects for DR-type devices is also nonstandard. If you are using one of these devices as an input or output device, change the values in BRU64K to match the CSR and vector addresses of your hardware.

   For example, assume you have a TU16 magnetic tape at nonstandard CSR and vector addresses of 176300 (octal) and 150 (octal), respectively, and an RK06 disk wth the default addresses. Assuming that the unit number for both units is zero, the following is the sequence of commands to CNF:

```
Enter first device:MM0:/CSR=176300/VEC=150

Enter second device:DM0:
```

4. Press RETURN, then enter the date and time using the TIM command. Use the TIM command again to verify that you entered the correct date and time. For example:

```
Hit RETURN and enter date and time as 'TIM HH:MM MM/DD/YY'

>TIM 14:32 05/25/83
>TIM
14:32:01 25-MAY-83
>
```

5. Run the Bad Block Locator Utility (BAD) on both of your output disks. For example, if your output device is DM0:, use the following command sequence:

```
>RUN BAD
>
BAD> DM0:/LIST
BAD -- DM0: Total bad blocks= 0.
BAD> CTRL/Z
>
```

The BAD /LIST switch lists any bad blocks as they are located.

6. Remove the BRU64K tape from the drive, and mount the distribution tape, labelled RSXM35, on the tape drive previously entered to CNF.

7. Run the Backup and Restore Utility (BRU) to copy the first backup set on the distribution kit tape to the output disk.

For example, to copy the distribution tape placed on a TU16 magnetic tape drive to an RK06 disk, enter the following command to BRU:

```
>RUN BRU
>
BRU>/BAC:RSXM35/INI/REW/DEN:1600/VER
From:    MM0:
To:      DM0:

BRU - Starting Tape 1 on MM0:
```

The BRU /BAC (backup set) switch specifies the backup set to be copied.

The BRU /INI (initialize) switch initializes the disk volume to which BRU is copying.

The BRU /REW (rewind) switch ensures that the tape is completely rewound before BRU begins to copy.

The BRU /DEN (density) switch specifies the density (bpi) at which the tape was written.

The BRU /VER (verify) switch causes BRU to verify the data after it is copied. BRU issues the following messages indicating that it has begun to verify the data copied:

```
BRU - End of Tape 1 on MM0:
BRU - Starting verify pass Tape 1 on MM0:
```

NOTE

If the verify fails, do not attempt the system generation without first retrying the backup operation. If the verify fails again, retry the backup operation using a new output disk. If the verify fails once again, it is likely that either your distribution kit is defective and should be replaced or your hardware needs to be checked.

8. After the RSXM35 backup set portion of the tape has been successfully copied to the disk and verified, BRU issues the following messages at your terminal:

```
BRU - End of Tape 1 on MM0:
BRU - Completed
```

9. Remove the output disk labelled RSXM35 from the drive, replace it with the scratch disk labelled CLISRC, and spin up the disk.

10. Enter the command line to BRU to copy the rest of the distribution tape to disk:

```
BRU>/BAC:CLISRC/INI/DEN:1600/VER
From:    MM0:
To:      DM0:

BRU - Starting Tape 1 on MM0:
```

The BRU /REW switch is not necessary because the tape should already be correctly positioned to copy the CLISRC backup-set portion of the distribution tape.

11. After the CLISRC backup set portion of the distribution tape has been successfully copied to the disk and verified, BRU issues the following messages at your terminal:

```
BRU - End of Tape 1 on MM0:
BRU - Starting verify pass Tape 1 on MM0:
BRU - End of Tape 1 on MM0:
BRU - Completed
BRU> CTRL/Z
>
```

At this point, you have completed the tape-to-disk copy and are ready to bootstrap the baseline system and generate your RSX-11M system. Refer to Appendix B for information on bootstrapping your distribution disk. Then turn to Chapter 3 for details on the structure of SYSGEN. It is important that you read Chapter 3 before you begin generating your system.

2.3.1.5 Copying the RK06/07 800 bpi Magnetic Tape Kit Stand-Alone - Use the following procedure to copy the 800 bpi magnetic tape kit using the host computer stand alone. The output disk or the scratch disk referred to in this section is the blank disk you intend to use as the target system disk. All commands shown in this section are issued to the RSX-11S basic MCR command line interpreter.

You will need two scratch disks to copy the distribution tape. (Place a physical label on each disk so that the scratch disks represent the backup set names in the distribution kit.)

To copy your distribution tapes to disk using a stand-alone system, perform the following steps:

1. Load the BRU64K tape and the output disk, labelled RSXM35, on the appropriate drives.

2. Hardware bootstrap the BRU64K tape (see Appendix B for the information regarding hardware bootstrap routines). The RSX-11S stand-alone system prints an identification line on your terminal, then begins to run the Stand-Alone Configuration and Disk Sizing Program (CNF).

3. Enter the device specifications in response to the prompts from CNF. The "first device" is the tape drive that will contain the distribution kit; the "second device" is the drive containing the output disk.

   If the magnetic tape controller or the disk controller, or both, are not connected to CSR and vector addresses that BRU64K expects, you must modify the software to incorporate the correct addresses before you can complete this step. If you wish to check your CSRs and vectors against the list of default CSR and vector addresses, enter the /DEV switch in response to the first CNF prompt. For example:

```
Enter first device:/DEV

Device        CSR        Vector     CSR Status

DB          176700        254       Present
DK          177404        220       Not Present
  .
  .
  .
```

   If your devices are at CSR and vector addresses other than those that BRU64K expects, or if your MF:- or MM:-type magnetic tape drive is on a formatter number other than zero, you must change the values in BRU64K. Do this by using the following CNF switches when you enter the device name:

```
/CSR=csr address
/VEC=vector address
/FOR=formatter number
```

   The vector addresses that BRU64K expects for DR, MS, and MT devices are nonstandard. The CSR address that BRU64K expects for DR-type devices is also nonstandard. If you are using one of these devices as an input or output device, change the values in BRU64K to match the CSR and vector addresses of your hardware.

   For example, assume you have a TU16 magnetic tape at nonstandard CSR and vector addresses of 176300 (octal) and 150 (octal), respectively, and an RK06 disk with the default addresses. Assuming that the unit number for both units is zero, the following is the sequence of commands to CNF:

```
Enter first device:MM0:/CSR=176300/VEC=150

Enter second device:DM0:
```

4. Press RETURN, then enter the date and time using the TIM command. Use the TIM command again to verify that you entered the correct date and time. For example:

```
Hit RETURN and enter date and time as 'TIM HH:MM MM/DD/YY'

>TIM 14:32 05/25/83
>TIM
14:32:01 25-MAY-83
>
```

5. Run the Bad Block Locator Utility (BAD) on both of your output disks. For example, if your output device is DM0:, use the following command sequence:

```
>RUN BAD
>
BAD> DM0:/LIST
BAD -- DM0: Total bad blocks= 0.
BAD> CTRL Z
>
```

The BAD /LIST switch lists any bad blocks as they are located.

6. Remove the BRU64K tape and mount the first distribution kit tape (labelled RSXM35) on the tape drive previously entered to CNF.

7. Run the Backup and Restore Utility (BRU) to copy the first backup set on the distribution kit tape to the output disk.

For example, to copy the first distribution tape placed on a TU16 magnetic tape drive to an RK06 disk, enter the following command to BRU:

```
>RUN BRU
>
BRU>/BAC:RSXM35/INI/REW/DEN:800/VER
From:    MM0:
To:      DM0:

BRU - Starting Tape 1 on MM0:
```

The BRU /BAC (backup set) switch specifies the backup set name to be copied.

The BRU /INI (initialize) switch initializes the disk volume to which BRU is copying.

The BRU /REW (rewind) switch ensures that the tape is completely rewound before BRU begins to copy.

The BRU /DEN (density) switch specifies the density (bpi) at which the tape was written.

The BRU /VER (verify) switch causes BRU to verify the data after it is copied. BRU issues the following messages to the terminal indicating that it has begun to verify the data copied:

```
BRU - End of Tape 1 on MM0:
BRU - Starting verify pass Tape 1 on MM0:
```

NOTE

If the verify fails, do not attempt the system generation without first retrying the backup operation. If the verify fails again, retry the backup operation using a new output disk. If the verify fails once again, it is likely that either your distribution kit is defective and should be replaced or your hardware needs to be checked.

8. When the first tape is successfully copied and verified, BRU issues the following messages on your terminal:

```
BRU - End of Tape 1 on MM0:
BRU - Completed
```

9. Remove the first distribution tape from the drive and replace it with the second distribution tape, labelled CLISRC.

   Remove the output disk labelled RSXM35 from the drive, replace it with the disk labelled CLISRC, and spin up the disk.

10. Enter the following command line to BRU to copy the second distribution tape to disk:

```
BRU>/BAC:CLISRC/INI/REW/DEN:800/VER
From:    MM0:
To:      DM0:

BRU - Starting Tape 1 on MM0:
```

   When the tape is successfully copied, BRU returns the following messages indicating that it has finished:

```
BRU - End of Tape 1 on MM0:
BRU - Starting verify pass Tape 1 on MM0:
BRU - End of Tape 1 on MM0:
BRU - Completed
BRU> CTRL Z
>
```

At this point, you have completed the tape-to-disk copy and are ready to bootstrap the baseline system and generate your RSX-11M system. Refer to Appendix B for information on bootstrapping your distribution disk. Then turn to Chapter 3 for details on the structure of SYSGEN. It is important that you read Chapter 3 before you begin generating your system.

2.3.1.6 Copying the RK06/07 Disk Kit Stand-Alone - Use the following procedures to copy the RK06/07 disk kit using the computer stand alone. The **output disk** or the **scratch disk** referred to in this section is the blank disk you intend to use for the target system disk. All commands shown in this section are issued to the RSX-11S basic MCR command line interpreter.

The baseline disk includes neither the Backup and Restore Utility (BRU) nor the BRU64K system. To create a backup copy of your distribution kit on a stand-alone system, you must first bootstrap the disk labelled CLISRC, then software bootstrap BRU64K (described below).

You will need two scratch disks to copy the distribution disks. (Place a physical label on each disk so that the scratch disks represent the labels on the respective disks in the distribution kit.)

To copy the disk distribution kit using a stand-alone system, perform the following steps:

1. Load the distribution disk labelled CLISRC and the scratch disk labelled RSXM35 in the appropriate drives and spin them up.

2. Determine the correct hardware bootstrap procedure for the disk drive on which CLISRC is mounted. (See Appendix B for the information regarding hardware bootstrap routines.)

3. Bootstrap the baseline system on the CLISRC disk by using the appropriate bootstrap routine for your processor and disk drive. When the baseline system comes up, it prints the following identification line on your terminal:

```
RSX-11M V4.1 BL35-A   124.K (BASELINE)

 .
 .
 .

>@ <EOF>
>
```

At this point, system initialization is complete and you may proceed to step 4.

4. CLISRC contains the BRU64K system that you need to copy the distribution kit. Therefore, software bootstrap the BRU64K system, which runs the RSX-11S stand-alone system. For example, if CLISRC is in DM0:, enter the following commands:

```
>INS $BOO
>BOO DM0:[1,51]BRU64K
```

Notice that you must first install the BOO (boot) task before software bootstrapping BRU64K.

NOTE

When copying the distribution disks, you should write protect the disk from which you are copying data. To do this, press the write protect button on the front of the disk drive.

The RSX-11S stand-alone system prints an identification line on your terminal, then begins to run the Stand-Alone Configuration and Disk Sizing Program (CNF).

5. Enter the device specifications in response to the prompts from CNF. The "first device" is the drive containing the CLISRC distribution kit disk; the "second device" is the drive containing the output disk.

If one or both of the disk controllers are not connected to CSR and vector addresses that BRU64K expects, you must modify the software to incorporate the correct addresses before you can complete this step. If you wish to check your CSRs and vectors against the list of default CSR and vector addresses, enter the /DEV switch in response to the first CNF prompt. For example:

```
Enter first device:/DEV

Device        CSR        Vector     CSR Status

DB          176700         254      Present
DK          177404         220      Not Present
 .
 .
 .
```

If your devices are at CSR and vector addresses other than those that BRU64K expects, you must change the values in BRU64K. Do this by using the following CNF switches when you enter the device name:

```
/CSR=csr address
/VEC=vector address
/FOR=formatter number
```

For example, assume your first RK06 disk device (the one containing CLISRC) is at nonstandard CSR and vector addresses of 176714 (octal) and 300 (octal), respectively, and your output RK06 disk device has the default addresses. Assuming that the unit numbers for both units are zero and one, respectively, the following is the sequence of commands to CNF:

```
Enter first device:DM0:/CSR=176714/VEC=300

Enter second device:DM1:
```

6. Press RETURN, then enter the date and time using the TIM command. Use the TIM command again to verify that you entered the correct date and time. For example:

```
Hit RETURN and enter date and time as 'TIM HH:MM MM/DD/YY'

>TIM 14:32 05/25/83
>TIM
14:32:01 25-MAY-83
>
```

7. Run the Bad Block Locator Utility (BAD) first on the scratch disk labelled RSXM35. After BAD finishes, spin down that disk and mount the scratch disk labelled CLISRC in the disk drive. Spin up that disk and run BAD on it. For example, if your output device is DM1:, use the following command sequence:

```
>RUN BAD
>
BAD> DM1:/LIST
BAD -- DM1: Total bad blocks= 0.
BAD> CTRL/Z
>
```

The BAD /LIST switch lists any bad blocks as they are located.

8. Run the Backup and Restore Utility (BRU) to copy the CLISRC distribution kit disk to the output disk. For example, if your output disk is DM1:, use the following command sequence:

```
>RUN BRU
>
BRU>/INI/VER
From:    DM0:
To:      DM1:
```

The BRU /INI (initialize) switch initializes the disk volume to which BRU is copying.

The BRU /VER (verify) switch causes BRU to verify the data after it is copied. BRU issues the following message to the terminal indicating that it has begun to verify the data copied:

```
BRU - Starting verify pass
```

NOTE

If the verify fails, do not attempt the system generation without first retrying the backup operation. If the verify fails again, retry the backup operation using a new output disk. If the verify fails once again, it is likely that either your distribution kit is defective and should be replaced or your hardware needs to be checked.

9. When CLISRC is successfully copied, BRU issues the following message at your terminal to indicate that it has finished:

```
BRU - Completed
```

Spin the disks down and remove them. Replace the CLISRC distribution disk with the baseline disk, labelled RSXM35. Replace the new copy of CLISRC with the second scratch disk, labelled RSXM35, and spin up both disks. Again, write-protect the disk from which you are copying data.

10. Copy the RSXM35 distribution disk to the output disk. For example, enter the following command sequence:

```
BRU>/INI/VER
From:   DM0:
To:     DM1:

BRU - Starting verify pass
```

11. When the second disk volume is successfully copied and verified, BRU issues the following message:

```
BRU - Completed
BRU>CTRL Z
>
```

At this point, you have completed the disk-to-disk copy of the distribution kit and are ready to bootstrap the baseline system on the RSXM35 disk and generate your RSX-11M system. Refer to Appendix B for information on bootstrapping your baseline system. Then turn to Chapter 3 for details on the structure of SYSGEN. It is important that you read Chapter 3 before you begin generating your system.

2.3.1.7 Copying the RL01/02 1600 bpi Magnetic Tape Kit Stand-Alone - Use the following procedure to copy the 1600 bpi magnetic tape kit using the host computer stand alone. The output disk or the scratch disk referred to in this section is the blank disk you intend to use as the target system disk. All commands shown in this section are issued to the RSX-11S basic MCR command line interpreter.

You will need six scratch RL01 or RL02 disks to copy the entire distribution tape. (Place a physical label on each disk so that the scratch disks represent the backup set names in the distribution kit.) However, only the first three backup sets (RSXM35, EXCPRV, and RLUTIL)

are used during a system generation. See post-system generation guidelines in Chapter 6 to determine whether or not you need to copy the remaining three backup sets.

To copy your distribution tape to disks using a stand-alone system, perform the following steps:

1. Load the BRU64K tape and the output disk, labelled EXCPRV, on the appropriate drives.

2. Hardware bootstrap the BRU64K tape (see Appendix B for the information regarding hardware bootstrap routines). The RSX-11S stand-alone system prints an identification line on your terminal, then begins to run the Stand-Alone Configuration and Disk Sizing Program (CNF).

3. Enter the device specifications in response to the prompts from CNF. The "first device" is the tape drive that will contain the distribution tape; the "second device" is the drive containing the output disk.

   If the magnetic tape controller or the disk controller, or both, are not connected to CSR and vector addresses that BRU64K expects, you must modify the software to incorporate the correct addresses before you can complete this step. If you wish to check your CSRs and vectors against the list of default CSR and vector addresses, enter the /DEV switch in response to the first CNF prompt. For example:

```
Enter first device:/DEV

Device          CSR         Vector      CSR Status

DB              176700       254        Present
DK              177404       220        Not Present
 .
 .
 .
```

   If your devices are at CSR and vector addresses other than those that BRU64K expects, or if your MF:- or MM:-type magnetic tape drive is on a formatter number other than zero, you must change the values in BRU64K. Do this by using the following CNF switches when you enter the device name:

```
/CSR=csr address
/VEC=vector address
/FOR=formatter number
```

   The vector addresses that BRU64K expects for DR, MS, and MT devices are nonstandard. The CSR address that BRU64K expects for DR-type devices is also nonstandard. If you are using one of these devices as an input or output device, change the values in BRU64K to match the CSR and vector addresses of your hardware.

   For example, assume you have a TU16 magnetic tape at nonstandard CSR and vector addresses of 176300 (octal) and 150 (octal), respectively, and an RL02 with the default addresses. Assuming that the unit number for both units is zero, the following is the sequence of commands to CNF:

```
Enter first device:MM0:/CSR=176300/VEC=150
Enter second device:DL0:
```

4. Press RETURN, then enter the date and time using the TIM command. Use the TIM command again to verify that you entered the correct date and time. For example:

```
Hit RETURN and enter date and time as 'TIM HH:MM MM/DD/YY'

>TIM 14:32 05/25/83
>TIM
14:32:01 25-MAY-83
>
```

5. Run the Bad Block Locator Utility (BAD) on all your output disks finishing with the scratch disk labelled RSXM35. For example, if your output device is DL0:, use the following command sequence:

```
>RUN BAD
>
BAD> DL0:/LIST
BAD -- DL0: Total bad blocks= 0.
BAD> CTRL Z
>
```

The BAD /LIST switch lists any bad blocks as they are located.

6. Remove the BRU64K tape from the drive and mount the distribution tape (labelled RSXM35) on the tape drive previously entered to CNF.

7. Run the Backup and Restore Utility (BRU) to copy the first backup set on the distribution kit to output disk. For example, to copy the distribution tape from a TU16 magnetic tape drive to an RL02, enter the following command to BRU:

```
>RUN BRU
>
BRU>/BAC:RSXM35/INI/REW/DEN:1600/VER
From:    MM0:
To:      DL0:

BRU - Starting Tape 1 on MM0:
```

The BRU /BAC (backup set) switch specifies the backup set to be copied.

The BRU /INI (initialize) switch initializes the disk volume to which BRU is copying.

The BRU /REW (rewind) switch ensures that the tape is completely rewound before BRU begins to copy.

The BRU /DEN (density) switch specifies the density (bpi) at which the tape was written.

The BRU /VER (verify) switch causes BRU to verify the data after it is copied. BRU issues the following messages indicating that it has begun to verify the data copied:

```
BRU - End of Tape 1 on MM0:
BRU - Starting verify pass Tape 1 on MM0:
```

NOTE

If the verify fails, do not attempt the system generation without first retrying the backup operation. If the verify fails again, retry the backup operation using a new output disk. If the verify fails once again, it is likely that either your distribution kit is defective and should be replaced or your hardware needs to be checked.

8. After the RSXM35 backup set portion of the tape has been successfully copied to the disk, BRU issues the following messages at your terminal:

```
BRU - End of Tape 1 on MM0:
BRU - Completed
```

9. Remove the first disk from the drive, replace it with the second scratch disk labelled EXCPRV, and spin up the disk.

10. Enter the command line to BRU to copy the EXCPRV backup set portion of the distribution tape to disk:

```
BRU>/BAC:EXCPRV/INI/DEN:1600/VER
From:    MM0:
To:      DL0:
BRU - Starting Tape 1 on MM0:
```

The BRU /REW switch is not necessary because the tape should already be correctly positioned to copy the EXCPRV backup set portion of the distribution tape.

The following warning message from BRU reminds you that the backup set being copied is not hardware bootable:

```
BRU - This disk will not contain a hardware bootable system
```

Only the baseline disk is hardware bootable in the RL01/02 distribution kit. Therefore, the warnings appear when BRU is copying all but the baseline disk (RSXM35).

11. After the EXCPRV backup set portion of the distribution tape has been successfully copied to the disk, BRU issues the following messages at your terminal:

```
BRU - End of Tape 1 on MM0:
BRU - Starting verify pass Tape 1 on MM0:
BRU - End of Tape 1 on MM0:
BRU - Completed
```

12. To copy the RLUTIL backup set and any of the remaining backup sets that you want to copy from the distribution tape to the scratch disks, repeat steps 9, 10, and 11 and replace the backup set name in the BRU command line with the backup set name of the portion of the distribution tape to be copied. Table 2-1 lists the RL01/02 backup set names in the order that you should copy them. Be sure that the scratch disks to which you are copying each backup set have been checked for bad blocks using the BAD utility.

13. To exit BRU after you have finished copying all the backup sets you need, type CTRL/Z in response to the BRU prompt.

At this point, you have completed the tape-to-disk copy and are ready to bootstrap the baseline system and generate your RSX-11M system. Refer to Appendix B for information on bootstrapping your distribution disk. Then turn to Chapter 3 for details on the structure of SYSGEN. It is important that you read Chapter 3 before you begin generating your system.

2.3.1.8 Copying the RL01/02 800 bpi Magnetic Tape Kit Stand-Alone - Use the following procedure to copy the 800 bpi magnetic tape kit using the host computer stand alone. The **output disk** or the **scratch disk** referred to in this section is the blank disk you intend to use as the target system disk. All commands shown in this section are issued to the RSX-11S basic MCR command line interpreter.

You will need six scratch RL01 or RL02 disks to copy the entire tape distribution kit. (Place a physical label on each disk so that the scratch disks represent the backup set names in the distribution kit.) However, only the first three backup sets (RSXM35, EXCPRV, and RLUTIL) are used during a system generation. See post-system generation guidelines in Chapter 6 to determine whether or not you need to copy the remaining three backup sets.

To copy your distribution tapes to disks using a stand-alone system, perform the following steps:

1. Load the BRU64K tape and the output disk, labelled EXCPRV, on the appropriate drives.

2. Hardware bootstrap the BRU64K tape (see Appendix B for the information regarding hardware bootstrap routines). The RSX-11S stand-alone system prints an identification line on your terminal, then begins to run the Stand-Alone Configuration and Disk Sizing Program (CNF).

3. Enter the device specifications in response to the prompts from CNF. The "first device" is the tape drive that will contain the distribution kit tape; the "second device" is the drive containing the output disk.

   If the magnetic tape controller or the disk controller, or both, are not connected to CSR and vector addresses that BRU64K expects, you must modify the software to incorporate the correct addresses before you can complete this step. If you wish to check your CSRs and vectors against the list of default CSR and vector addresses, enter the /DEV switch in response to the first CNF prompt. For example:

```
Enter first device:/DEV

Device        CSR        Vector      CSR Status

DB          176700         254       Present
DK          177404         220       Not Present
 .
 .
 .
```

If your devices are at CSR and vector addresses other than those that BRU64K expects, or if your MF:- or MM:-type magnetic tape drive is on a formatter number other than zero, you must change the values in BRU64K. Do this by using the following CNF switches when you enter the device name:

```
/CSR=csr address
/VEC=vector address
/FOR=formatter number
```

The vector addresses that BRU64K expects for DR, MS, and MT devices are nonstandard. The CSR address that BRU64K expects for DR-type devices is also nonstandard. If you are using one of these devices as an input or output device, change the values in BRU64K to match the CSR and vector addresses of your hardware.

For example, assume you have a TU16 magnetic tape at nonstandard CSR and vector addresses of 176300 (octal) and 150 (octal), respectively, and an RL02 disk with the default addresses. Assuming that the unit number for both units is zero, the following is the sequence of commands to CNF:

```
Enter first device:MM0:/CSR=176300/VEC=150

Enter second device:DL0:
```

4. Press RETURN, then enter the date and time using the TIM command. Use the TIM command again to verify that you entered the correct date and time. For example:

```
Hit RETURN and enter date and time as 'TIM HH:MM MM/DD/YY'

>TIM 14:32 05/25/83
>TIM
14:32:01 25-MAY-83
>
```

5. Run the Bad Block Locator Utility (BAD) on all your output disks finishing with the scratch disk labelled RSXM35. For example, if your output device is DL0:, use the following command sequence:

```
>RUN BAD
>
BAD>DL0:/LIST
BAD -- DL0: Total bad blocks= 0.
BAD> CTRL Z
>
```

The BAD /LIST switch lists any bad blocks as they are located.

6. Remove the BRU64K tape from the drive and mount the distribution kit tape labelled RSXM35 on the tape drive previously entered to CNF.

7. Run the Backup and Restore Utility (BRU) to copy the first backup set on the distribution kit tape to the output disk. For example, to copy from a TU16 magnetic tape drive to an RL02, enter the following command to BRU:

```
>RUN BRU
>
BRU>/BAC:RSXM35/INI/REW/DEN:800/VER
From:    MM0:
To:      DL0:

BRU -- Starting Tape 1 on MM0:
```

The BRU /BAC (backup set) switch specifies the backup set to be copied.

The BRU /INI (initialize) switch initializes the disk volume to which BRU is copying.

The BRU /REW (rewind) switch ensures that the tape is completely rewound before BRU begins to copy.

The BRU /DEN (density) switch specifies the density (bpi) at which the tape was written.

The BRU /VER (verify) switch causes BRU to verify the data after it is copied. BRU issues the following messages indicating that it has begun to verify the data copied:

```
BRU - End of Tape 1 on MM0:
BRU - Starting verify pass Tape 1 on MM0:
```

NOTE

If the verify fails, do not attempt the system generation without first retrying the backup operation. If the verify fails again, retry the backup operation using a new output disk. If the verify fails once again, it is likely that either your distribution kit is defective and should be replaced or your hardware needs to be checked.

8. After the RSXM35 backup set portion of the tape has been successfully copied to the disk, BRU issues the following message at your terminal:

```
BRU - End of Tape 1 on MM0:
BRU - Completed
```

9. Remove the first disk from the drive, replace it with the second scratch disk labelled EXCPRV, and spin up the disk.

10. Enter the command line to BRU to copy the EXCPRV backup-set portion of the distribution tape to disk:

```
BRU>/BAC:EXCPRV/INI/DEN:800/VER
From:    MM0:
To:      DL0:

BRU - Starting Tape 1 on MM0:
```

The BRU /REW switch is not necessary because the tape should already be correctly positioned to copy the EXCPRV backup set portion of the distribution tape.

The following warning message from BRU reminds you that the backup set being copied is not hardware bootable:

```
BRU - This disk will not contain a hardware bootable system
```

Only the baseline disk is hardware bootable in the RL01/02 distribution kit. Therefore, the warnings appear when BRU is copying all but the baseline disk (RSXM35).

11. After the EXCPRV backup set portion of the distribution tape has been successfully copied to the disk, BRU issues the following messages on your terminal:

```
BRU - End of Tape 1 on MM0:
BRU - Starting verify pass Tape 1 on MM0:
BRU - End of Tape 1 on MM0:
BRU - Completed
```

12. Repeat steps 9, 10, and 11 until you have sucessfully copied the RLUTIL backup set portion of the distribution tape onto a scratch disk labelled with the same name. Simply replace the backup set name in the BRU command line with the backup set name of the portion of the distribution tape to be copied.

13. Remove the first distribution tape from the drive and replace it with the second tape, labelled MCRSRC if you are copying any of the backup sets from it.

14. Remove the disk labelled RLUTIL from the drive and replace it with the next scratch disk, labelled MCRSRC, and spin up the disk.

15. Enter the command line to BRU to copy the MCRSRC backup set portion of the second distribution tape:

```
BRU>/BAC:MCRSRC/INI/REW/DEN:800/VER
From:   MM0:
To:     DL0:
```

16. To copy the two remaining backup sets on the second distribution tape to the two scratch disks, repeat steps 9, 10, and 11 and replace the backup set name in the BRU command line with the backup set name of the portion of the distribution tape to be copied. Table 2-1 lists the RL01/02 backup set names in the order that you should copy them. Be sure that the scratch disks to which you are copying each backup set have been checked for bad blocks using the BAD utility.

17. To exit BRU after you have finished copying the all the backup sets you need, type CTRL/Z in response to the BRU prompt.

At this point, you have completed the tape-to-disk copy and are ready to bootstrap the baseline system and generate your RSX-11M system. Refer to Appendix B for information on bootstrapping your distribution disk. Then turn to Chapter 3 for details on the structure of SYSGEN. It is important that you read Chapter 3 before you begin generating your system.

2.3.1.9 Copying the RL01/02 Disk Kit Stand-Alone - Use the following procedures to copy the RL01/02 disk kit using the computer stand alone. The **output disk** or the **scratch disk** referred to in this section is the blank disk you intend to use for the target system disk. All commands shown in this section are issued to the RSX-11S basic MCR command line interpreter.

The baseline disk (RSXM35) includes neither the Backup and Restore Utility (BRU) nor the stand-alone BRU64K utility. To create a backup copy of your distribution kit on a stand-alone system, you must first bootstrap the baseline system, then software bootstrap BRU64K (described in Step 5) from the distribution disk labelled RLUTIL.

You will need six scratch RL01 or RL02 disks to copy the entire distribution kit. (Place a physical label on each disk so that the scratch disks represent the labels on the respective disks in the distribution kit.) However, only the first three disks (RSXM35, EXCPRV, and RLUTIL) are used during a system generation. See post-system generation guidelines in Chapter 6 to determine whether or not you need to copy the remaining three disks.

To copy the disk distribution kit using a stand-alone system, perform the following steps:

1. Place the baseline disk (RSXM35) and the distribution disk labelled RLUTIL in the appropriate drives and spin them up.

2. Determine the correct hardware procedure for the disk drive on which the baseline disk is mounted. (See Appendix B for the information regarding hardware bootstrap routines.)

3. Bootstrap the baseline system on the RSXM35 disk by using the appropriate bootstrap routine for your processor and disk drive (see Appendix B). When the baseline system comes up, it prints the following identification line on your terminal:

```
RSX-11M V4.1 BL35-A   124.K (BASELINE)

 .
 .
 .

>@ <EOF>
>
```

   At this point, system initialization is complete and you may proceed to step 4.

4. The RLUTIL disk contains the BRU64K system that you need to copy the distribution kit. Therefore, when the baseline system comes up, software mount RLUTIL. For example, if your baseline disk is on DL0: and RLUTIL is on DL1:, enter the following command to mount RLUTIL:

```
>MOU DL1:RLUTIL
```

5. Software bootstrap the BRU64K system, which runs the RSX-11S stand-alone system. For example, if RLUTIL is in DL1:, enter the following commands:

```
>INS $BOO
>BOO DL1:[1,51]BRU64K
```

   Notice that you must first install the BOO (boot) task before software bootstrapping BRU64K.

The RSX-11S stand-alone system prints an identification line on your terminal, then begins to run the Stand-Alone Configuration and Disk Sizing Program (CNF)

6. Remove the RLUTIL distribution disk from DL1:, physically mount the scratch disk labelled RLUTIL in the drive, and spin up the disk. Also, write-protect the RSXM35 distribution disk by pressing the write protect button on the face of the disk drive.

7. Enter the device specifications in response to the prompts from CNF. The "first device" is the drive containing the RSXM35 distribution kit disk; the "second device" is the drive containing the output disk labelled RLUTIL.

   If one or both of the disk controllers are not connected to CSR and vector addresses that BRU64K expects, you must modify the software to incorporate the correct addresses before you can complete this step. If you wish to check your CSRs and vectors against the list of default CSR and vector addresses, enter the /DEV switch in response to the first CNF prompt. For example:

```
Enter first device:/DEV

Device          CSR         Vector      CSR Status

DB             176700        254        Present
DK             177404        220        Not Present
  .
  .
  .
```

   If your devices are at CSR and vector addresses other than those that BRU64K expects, you must change the values in BRU64K. Do this by using the following CNF switches when you enter the device name:

```
/CSR=csr address
/VEC=vector address
/FOR=formatter number
```

   For example, assume your first disk device (the one containing RSXM35) is at nonstandard CSR and vector addresses of 176714 (octal) and 300 (octal), respectively, and your output disk device has the default addresses. Assuming that the unit numbers of both units are zero and one, respectively, the following is the sequence of commands to CNF:

```
Enter first device:DL0:/CSR=176714/VEC=300

Enter second device:DL1:
```

8. Press RETURN, then enter the date and time using the TIM command. Use the TIM command again to verify that you entered the correct date and time. For example:

```
Hit RETURN and enter date and time as 'TIM HH:MM MM/DD/YY'

>TIM 14:32 05/25/83
>TIM
14:32:01 25-MAY-83
>
```

9. Run the Bad Block Locator Utility (BAD) on all your output disks beginning with the RLUTIL scratch disk and finishing with the RSXM35 scratch disk. For example, if your output device is DL1:, use the following command sequence:

```
>RUN BAD
>
BAD> DL1:/LIST
BAD -- DL1: Total bad blocks= 0.
BAD>CTRL Z
>
```

The BAD /LIST switch lists any bad blocks as they are located.

10. Run the Backup and Restore Utility (BRU) to copy the RSXM35 distribution kit disk to the RSXM35 output disk.

For example, if your output device is DL1:, use the following command sequence:

```
>RUN BRU
>
BRU>/INI/VER
From:    DL0:
To:      DL1:
```

The BRU /INI (initialize) switch initializes the disk volume to which BRU is copying.

The BRU /VER (verify) switch causes BRU to verify the data after it is copied. BRU issues the following message indicating that it has begun to verify the data copied:

```
BRU - Starting verify pass
```

NOTE

If the verify fails, do not attempt the system generation without first retrying the backup operation. If the verify fails again, retry the backup operation using a new output disk. If the verify fails once again, it is likely that either your distribution kit is defective and should be replaced or your hardware needs to be checked.

11. When the distribution disk is successfully copied, BRU issues the following message to indicate that it has finished:

```
BRU - Completed
```

Spin down both disks and remove them. Replace the distribution disk with the next distribution disk. Replace the new disk copy with the next scratch disk, and spin up both disks.

NOTE

When copying the distribution disks, it is a good idea to write-protect the disk from which you are copying data. To do this, press the write protect button on the face of the disk drive.

12. Enter the command line to BRU to copy the next disk. For example, if your output device is DL1:, use the following command sequence:

```
BRU>/INI/VER
From:   DL0:
To:     DL1:
```

The following warning message from BRU reminds you that the disk being copied is not hardware bootable:

```
BRU - This disk will not contain a hardware bootable system
```

Only the baseline disk is hardware bootable in the RL01/02 distribution kit. Therefore, the warnings appear when BRU is copying all but the baseline disk (RSXM35).

13. When the disk is successfully copied, BRU issues the following messages to indicate that it has finished:

```
BRU - Starting verify pass
BRU - Completed
```

14. To copy the remaining four distribution disks, simply repeat steps 11, 12, and 13 with each remaining distribution disk you need to copy for your system generation.

15. To exit BRU ater you have finished copying all the backup sets you need, type CTRL/Z in response to the BRU prompt.

At this point, you have completed the disk-to-disk copy of the distribution kit and are ready to bootstrap the baseline system again and generate your RSX-11M system. Refer to Appendix B for information on bootstrapping your baseline disk. Then turn to Chapter 3 for details on the structure of SYSGEN. It is important that you read Chapter 3 before you begin generating your system.

2.3.2 Copying Kits On-Line

The following seven sections describe procedures for copying magnetic tape and disk distribution kits using a host computer already running an RSX-11M system.

If you have a big disk magnetic tape kit, read Section 2.3.2.1 next.

If you have an RC25 disk kit, read Section 2.3.2.2 next.

If you have an RK06/07 1600 bpi magnetic tape kit, read Section 2.3.2.3 next.

If you have an RK06/07 800 bpi magnetic tape kit, read Section 2.3.2.4 next.

If you have an RK06/07 disk kit, read Section 2.3.2.5 next.

If you have an RL01/02 1600 bpi magnetic tape kit kit, read Section 2.3.2.6 next.

If you have an RL01/02 800 bpi magnetic tape kit, read Section 2.3.2.7 next.

If you have an RL01/02 disk kit, read Section 2.3.2.8 next.

2.3.2.1 Copying the Big Disk Magnetic Tape Kit On-Line - Use the following procedure to copy either the big disk 1600 bpi tape kit or the big disk 800 bpi tape kit using the host computer on line. You must use the disk copy of the distribution kit to generate an RSX-11M system. The tape kit may serve as the permanent backup copy. The **output disk** or the **scratch disk** referred to in this section is the blank disk you intend to use for the target system disk.

You will need one scratch disk to copy the distribution kit. (Place a physical label on the disk so that the scratch disk represents the backup set name in the distribution kit.) If the disk you intend to copy to is either an RA80 disk or an RA81 disk, the fixed disk is the scratch disk. The type of scratch disk you use must be compatible with your particular big disk kit. If your scratch disk is a fixed-media disk, that disk cannot be the disk that the current system is running on.

You should format removable-media scratch disks (using the FMT utility) and check either fixed- or removable-media scratch disks for bad blocks (using the BAD utility) before copying the distribution kit to them. Refer to the RSX-11M/M-PLUS Utilities Manual for details on using BAD and FMT.

To copy your distribution tapes to disk using an on-line system, perform the following steps:

1. If you are using a multiuser system, allocate the appropriate disk and tape drives for the media to be used. For example, if you load your distribution tapes on a TU16 magnetic tape drive and copy the tapes to an RM02, allocate the devices as follows:

```
>ALL DR0:
>ALL MM0:
```

2. Load the distribution kit tape labelled RSXM35 on the magnetic tape drive.

3. Load the scratch disk, physically labelled RSXM35, in the drive and spin up the disk. If your big disk media is either the RA80 or the RA81 (both fixed-media disks) or the fixed-media portion of the RC25, the fixed-media disk serves as the scratch disk.

NOTE

The disk volume should not be mounted. If the disk is mounted as a Files-11 device, BRU will issue the following warning message:

```
BRU - *FATAL* - Privilege violation
```

4. Invoke the Backup and Restore Utility (BRU) and enter the command line to copy the tape to disk. For example, to copy the distribution tape to the RM02 disk, enter the following command to BRU:

```
>BRU
BRU>/BAC:RSXM35/INI/REW/DEN:1600/VER (1600 bpi tape)
BRU>/BAC:RSXM35/INI/REW/DEN:800/VER (800 bpi tape)
From:   MM0:
To:     DR0:

BRU - Starting Tape 1 on MM0:
```

The BRU /BAC (backup set) switch specifies the backup set to be copied.

The BRU /INI (initalize) switch initalizes the disk volume to which BRU is copying.

The BRU /REW (rewind) switch ensures that the tape is completely rewound before BRU begins to copy.

The BRU /DEN (density) switch specifies the density (bpi) at which the tape was written.

The BRU /VER (verify) switch causes BRU to verify the data after it is copied. BRU issues the following messages to the terminal indicating it has begun to verify the data copied:

```
BRU - End of Tape 1 on MM0:
BRU - Starting verify pass Tape 1 on MM0:
```

NOTE

If the verify fails, do not attempt the system generation without first retrying the backup operation. If the verify fails again, retry the backup operation using a new output disk. If the verify fails once again, it is likely that either your distribution kit is defective and should be replaced or your hardware needs to be checked.

When the tape is successfully copied and verified, BRU issues the following messages:

```
BRU - End of Tape 1 on MM0:
BRU - Completed
```

5. If your distribution kit contains two 800 bpi tapes, remove the first distribution tape from the drive and replace it with the second distribution tape (labelled 2/2).

   When you have loaded the second tape, put the magnetic tape drive on-line. BRU will proceed to copy the second tape and issue the following message:

```
BRU - Starting Tape 2 on MM0:
```

   The message indicates that BRU has begun copying the contents of the second distribution tape to disk. (BRU also verifies the second reel). When the tape is successfully copied, BRU returns the following messages to indicate that it has finished:

```
BRU - End of Tape 2 on MM0:
BRU - Starting verify pass Tape 2 on MM0:
BRU - End of Tape 2 on MM0:
BRU - Completed
BRU>CTRL/Z
>
```

   You may then unload the second distribution tape.

At this point, you have completed the tape-to-disk copy and are ready to generate your RSX-11M system. Before you begin generating your system, it is important that you read Chapter 3 for details on the structure of SYSGEN.

2.3.2.2 Copying the RC25 Disk Kit On-Line - Use the following procedure to copy the RC25 disk kit using the host computer on line. The output disk or the scratch disk referred to in this section is the blank disk you intend to use for the target system disk.

You will need one scratch disk (presumably the fixed-media disk) to copy the distribution disk.

You should check the scratch disks for bad blocks (using the BAD utility) before copying the distribution kit. Refer to the RSX-11M/M-PLUS Utilities Manual for details on using BAD.

To copy your distribution disk using an on-line system, perform the following steps:

1. If you are using a multiuser system, allocate the appropriate disk drives for the media to be used. For example, allocate the devices as follows:

```
>ALL DU0:
>ALL DU1:
```

2. Load the distribution disk labelled RSXM35 in DU0:, and spin up both disks.

NOTE

The disk volume should not be mounted. If the disk is mounted as a Files-11 device, BRU will issue the following warning message:

```
BRU - *FATAL* - Privilege violation
```

When copying the distribution disks, it is a good idea to write protect the disk from which you are copying data.

3. Invoke the Backup and Restore Utility (BRU) and enter the following command line to copy the distribution disk to the scratch (fixed-media) disk:

```
>BRU
BRU>/INI/VER
From:    DU0:
To:      DU1:
```

The BRU /INI (initialize) switch initializes the disk volume to which BRU is copying.

The BRU /VER (verify) switch causes BRU to verify the data after it is copied. BRU issues the following message to the terminal indicating it has begun to verify the data copied:

```
BRU - Starting verify pass
```

NOTE

If the verify fails, do not attempt the system generation without first retrying the backup operation. If the verify fails again, retry the backup operation using a new output disk. If the verify fails once again, it is likely that either your distribution kit is defective and should be replaced or your hardware needs to be checked.

4. When the distribution disk is successfully copied, BRU issues a message at your terminal to indicate that it has finished:

```
BRU - Completed
BRU> (CTRL Z)
>
```

Spin down the disks, replace the distribution kit disk with a scratch disk, and spin up both disks.

At this point, you have completed the disk-to-disk copy of the distribution kit and are ready to generate your RSX-11M system. Before you begin generating your system, it is important that you read Chapter 3 for details on the structure of SYSGEN.

2.3.2.3 Copying the RK06/07 1600 bpi Magnetic Tape Kit On-line - Use the following procedure to copy the RK06/07 1600 bpi tape kit using the host computer on line. You must use a disk copy of the distribution kit to generate an RSX-11M system. The tape kit may serve as the permanent backup copy. The output disk or the scratch disk referred to in this section is the blank disk you intend to use for the target system disk.

You will need two scratch disks to copy the distribution tape. (Place a physical label on each disk so that the scratch disks represent the backup set names in the distribution kit.)

You should format the scratch disks (using the FMT utility) and check them for bad blocks (using the BAD utility) before copying the distribution kit. Refer to the RSX-11M/M-PLUS Utilities Manual for details on using BAD and FMT.

To copy your distribution tape to disk using an on-line system, perform the following steps:

1. If you are using a multiuser system, allocate the appropriate disk and tape drives for the media to be used. For example, if you load your distribution tape on a TU16 magnetic tape drive and copy the tape to RK06s or RK07s, allocate the devices as follows:

```
>ALL DM0:
>ALL MM0:
```

2. Load a scratch disk physically labelled RSXM35 in the appropriate drive and spin up the disk.

NOTE

The disk volume should not be mounted. If the disk is mounted as a Files-11 device, BRU will issue the following warning message:

```
BRU - *FATAL* - Privilege violation
```

3. Invoke the Backup and Restore Utility (BRU) and enter the command line to copy the tape to disk. For example, enter the following command line to BRU:

```
>BRU
BRU>/BAC:RSXM35/INI/REW/DEN:1600/VER
From:    MM0.
To:      DM0:

BRU - Starting Tape 1 on MM0:
```

The BRU /BAC (backup set) switch specifies the backup set to be copied.

Ths BRU /INI (initialize) switch initializes the disk volume to which BRU is copying.

The BRU /REW (rewind) switch ensures that the tape is completely rewound before BRU begins to copy.

The BRU /DEN (density) switch specifies the density (bpi) at which the tape was written.

The BRU /VER (verify) switch causes BRU to verify the data after it is copied. BRU issues the following message indicating that it has begun to verify the data copied:

```
BRU - End of Tape 1 on MM0:
BRU - Starting verify pass Tape 1 on MM0:
```

NOTE

If the verify fails, do not attempt the system generation without first retrying the backup operation. If the verify fails again, retry the backup operation using a new output disk. If the verify fails once again, it is likely that either your distribution kit is defective and should be replaced or your hardware needs to be checked.

4. After the RSXM35 backup set portion of the tape has been successfully copied to the disk, BRU issues the following message on your terminal:

```
BRU - End of Tape 1 on MM0:
BRU - Completed
```

5. Remove the disk labelled RSXM35 from the drive, replace it with the scratch disk labelled CLISRC, and spin up the disk.

6. Enter the command line to BRU to copy the rest of the distribution tape to disk:

```
BRU>/BAC:CLISRC/INI/DEN:1600/VER
From:    MM0:
To:      DM0:
```

The BRU /REW switch is optional because the tape should already be correctly positioned to copy the CLISRC backup set portion of the distribution tape.

7. After the CLISRC backup set portion of the distribution tape has been successfully copied to the disk, BRU issues the following messages at your terminal:

```
BRU - End of Tape 1 on MM0:
BRU - Starting verify pass Tape 1 on MM0:
BRU - End of Tape 1 on MM0:
BRU - Completed
BRU> CTRL/Z
>
```

At this point, you have completed the tape-to-disk copy and are ready to generate your RSX-11M system. Before you begin generating your system, it is important that you read Chapter 3 for details on the structure of SYSGEN.

2.3.2.4 Copying the RK06/07 800 bpi Magnetic Tape Kit On-Line - Use the following procedure to copy the RK06/07 800 bpi tape kit using the host computer on line. You must use a disk copy of the distribution kit to generate an RSX-11M system. The tape kit may serve as the permanent backup copy. The **output disk** or the **scratch disk** referred to in this section is the blank disk you intend to use for the target system disk.

You will need two scratch disks to copy the distribution tapes. (Place a physical label on each disk so that the scratch disks represent the backup set names in the distribution kit.)

You should format the scratch disk (using the FMT utility) and check it for bad blocks (using the BAD utility) before copying the distribution kit to it. Refer to the RSX-11M/M-PLUS Utilities Manual for details on using BAD and FMT.

To copy your distribution tapes to disk using an on-line system, perform the following steps:

1. If you are using a multiuser system, allocate the appropriate disk and tape drives for the media to be used. For example, if you load your distribution tapes on a TU16 magnetic tape drive and copy the tapes to either RK06s or RK07s, allocate the devices as follows:

```
>ALL DM0:
>ALL MM0:
```

2. Load the first distribution tape on the drive. The tape should be identified by the backup set label RSXM35.

3. Load the scratch disk physically labelled RSXM35 in the appropriate drive and spin up the disk.

NOTE

The disk volume should not be mounted. If the disk is mounted as a Files-11 device, BRU will issue the following warning message:

```
BRU - *FATAL* - Privilege violation
```

4. Invoke the Backup and Restore Utility (BRU) and enter the command line to copy the first tape to disk. For example, enter the following command line to BRU:

```
>BRU
BRU>/BAC:RSXM35/INI/REW/DEN:800/VER
From:    MM0:
To:      DM0:

BRU - Starting Tape 1 on MM0:
```

The BRU /BAC (backup set) switch specifies the backup set to be copied.

The BRU /INI (initialize) switch initializes the disk volume to which BRU is copying.

The BRU /REW (rewind) switch ensures that the tape is completely rewound before BRU begins to copy.

The BRU /DEN (density) switch specifies the density (bpi) at which the tape was written.

The BRU /VER (verify) switch causes BRU to verify the data after it is copied. BRU issues the following messages to the terminal indicating it has begun to verify the data copied:

```
BRU - End of Tape 1 on MM0:
BRU - Starting verify pass Tape 1 on MM0:
```

NOTE

If the verify fails, do not attempt the system generation without first retrying the backup operation. If the verify fails again, retry the backup operation using a new output disk. If the verify fails once again, it is likely that either your distribution kit is defective and should be replaced or your hardware needs to be checked.

5. When the first tape is successfully copied and verified, BRU issues the following messages at your terminal:

```
BRU - End of Tape 1 on MM0:
BRU - Completed
```

6. Remove the first distribution tape from the drive and replace it with the second distribution tape, labelled CLISRC.

Remove the disk labelled RSXM35 from the drive, replace it with the second scratch disk labelled CLISRC, and spin up the disk.

7. Enter the command line to BRU to copy the second distribution tape to disk:

```
BRU>/BAC:CLISRC/INI/REW/DEN:800/VER
From:    MM0:
To:      DM0:

BRU - Starting Tape 1 on MM0:
```

8. When the tape is successfully copied, BRU returns the following messages to indicate that it has finished:

```
BRU - End of Tape 1 on MM0:
BRU - Starting verify pass Tape 1 on MM0:
BRU - End of Tape 1 on MM0:
BRU - Completed
BRU> CTRL/Z
>
```

   You may then unload the second distribution tape and the new disk.

At this point, you have completed the tape-to-disk copy and are ready to generate your RSX-11M system. Before you begin generating your system, it is important that you read Chapter 3 for details on the structure of SYSGEN.

2.3.2.5 Copying the RK06/07 Disk Kit On-Line - Use the following procedure to copy the RK06/07 disk kit using the host computer on line. The output disk or the scratch disk referred to in this section is the blank disk you intend to use for the target system disk.

You will need two scratch disks to copy the distribution disks. (Place a physical label on each disk so that the scratch disks represent the labels on the respective disks in the distribution kit.)

You should format the scratch disks (using the FMT utility) and check them for bad blocks (using the BAD utility) before copying the distribution kit. Refer to the RSX-11M/M-PLUS Utilities Manual for details on using BAD and FMT.

To copy your distribution disk using an on-line system, perform the following steps:

1. If you are using a multiuser system, allocate the appropriate disk drives for the media to be used. For example, allocate the devices as follows:

```
>ALL DM0:
>ALL DM1:
```

2. Load the distribution disk labelled RSXM35 in DM0:; then load the scratch disk labelled RSXM35 in DM1:, and spin up both disks.

NOTE

The disk volume should not be mounted. If the disk is mounted as a Files-11 device, BRU will issue the following warning message:

```
BRU - *FATAL* - Privilege violation
```

When copying the distribution disks, it is a good idea to write protect the disk from which you are copying data.

3. Invoke the Backup and Restore Utility (BRU) and enter the command line to copy the disk. For example, enter the following command line to BRU:

```
>BRU
BRU>/INI/VER
From:    DM0:
To:      DM1:
```

The BRU /INI (initialize) switch initializes the disk volume to which BRU is copying.

The BRU /VER (verify) switch causes BRU to verify the data after it is copied. BRU issues the following message to the terminal indicating it has begun to verify the data copied:

```
BRU - Starting verify pass
```

NOTE

If the verify fails, do not attempt the system generation without first retrying the backup operation. If the verify fails again, retry the backup operation using a new output disk. If the verify fails once again, it is likely that either your distribution kit is defective and should be replaced or your hardware needs to be checked.

4. When the distribution disk is successfully copied, BRU issues a message at your terminal to indicate that it has finished:

```
BRU - Completed
```

Spin down both disks and remove them. Replace the first distribution disk with the second one, labelled CLISRC. Replace the new copy of RSXM35 with the second scratch disk, and spin up both disks. Again, write protect the disk from which you are copying data.

5. Enter the command line to BRU to copy the disks:

```
BRU>/INI/VER
From:    DM0:
To:      DM1:
```

6. When the second distribution disk volume is successfully copied and verified, BRU issues the following message:

```
BRU - Starting verify pass
BRU - Completed
BRU> CTRL/Z
>
```

At this point, you have completed the disk-to-disk copy of the distribution kit and are ready to generate your RSX-11M system. Before you begin generating your system, it is important that you read Chapter 3 for details on the structure of SYSGEN.

2.3.2.6 Copying the RL01/02 1600 bpi Magnetic Tape Kit On-line - Use the following procedure to copy the RL01/02 1600 bpi tape kit using the host computer on line. You must use a disk copy of the distribution kit to generate an RSX-11M system. The tape kit may serve as the permanent backup copy. The **output disk** or the **scratch disk** referred to in this section is the blank disk you intend to use for the target system disk.

You will need six scratch disks to copy the entire distribution tape. (Place a physical label on each disk so that the scratch disks represent the backup set names in the distribution kit.) However, only the first three backup sets (RSXM35, EXCPRV, and RLUTIL) are used during a system generation. See the post-system generation guidelines in Chapter 6 to determine whether or not you need to copy the three remaining backup sets.

You should check the scratch disks for bad blocks (using the BAD utility) before copying the distribution kit to it. Refer to the RSX-11M/M-PLUS Utilities Manual for details on using BAD and FMT.

To copy your distribution tape to disk using an on-line system, perform the following steps:

1. If you are using a multiuser system, allocate the appropriate disk and tape drives for the media to be used. For example, if you load your distribution tape on a TU16 magnetic tape drive and copy the tape to either RL01s or RL02s, allocate the devices as follows:

```
>ALL DL0:
>ALL MM0:
```

2. Load a scratch disk physically labelled RSXM35 in the appropriate drive and spin up the disk.

NOTE

The disk volume should not be mounted. If the disk is mounted as a Files-11 device, BRU will issue the following warning message:

```
BRU - *FATAL* - Privilege violation
```

3. Invoke the Backup and Restore Utility (BRU) and enter the command line to copy the first backup set on the tape to disk. For example, enter the following command line to BRU:

```
>BRU
BRU>/BAC:RSXM35/INI/REW/DEN:1600/VER
From:    MM0:
To:      DL0:

BRU - Starting Tape 1 on MM0:
```

The BRU /BAC (backup set) switch specifies the backup set to be copied.

The BRU /INI (initialize) switch initializes the disk volume to which BRU is copying.

The BRU /REW (rewind) switch ensures that the tape is completely rewound before BRU begins to copy.

The BRU /DEN (density) switch specifies the density (bpi) at which the tape was written.

The BRU /VER (verify) switch causes BRU to verify the data after it is copied. BRU issues the following messages indicating that it has begun to verify the data copied:

```
BRU - End of Tape 1 on MM0:
BRU - Starting verify pass Tape 1 on MM0:
```

NOTE

If the verify fails, do not attempt the system generation without first retrying the backup operation. If the verify fails again, retry the backup operation using a new output disk. If the verify fails once again, it is likely that either your distribution kit is defective and should be replaced or your hardware needs to be checked.

4. After the RSXM35 backup set portion of the tape has been successfully copied to the disk, BRU issues the following messages at your terminal:

```
BRU - End of Tape 1 on MM0:
BRU - Completed
```

5. Remove the first disk labelled RSXM35 from the drive, replace it with the second scratch disk labelled EXCPRV, and spin up the disk.

6. Enter the command line to BRU to copy the EXCPRV backup set portion of the distribution tape to disk:

```
BRU>/BAC:EXCPRV/INI/DEN:1600/VER
From:    MM0:
To:      DL0:

Starting Tape 1 on MM0:
```

The BRU /REW switch is optional because the tape should be correctly positioned to copy the EXCPRV backup set portion of the distribution tape.

The following message from BRU reminds you that the backup set being copied is not hardware bootable:

```
BRU - This disk will not contain a hardware bootable system
```

Only the baseline disk is hardware bootable in the RL01/02 distribution kit. Therefore, the warnings appear when BRU is copying all but the baseline disk (RSXM35).

7. After the EXCPRV backup set portion of the distribution tape has been successfully copied to the disk, BRU issues the following messages at your terminal:

```
BRU - End of Tape 1 on MM0:
BRU - Starting verify pass Tape 1 on MM0:
BRU - End of Tape 1 on MM0:
BRU - Completed
```

8. To copy the four remaining backup sets on the distribution tape to the four scratch disks, repeat steps 5, 6, and 7 and replace the backup set label in the BRU command line with the backup set label of the portion of the distribution tape to be copied. Table 2-1 lists the RL01/02 backup set names in the order that you should copy them. Be sure that the scratch disks to which you are copying each backup set have been checked for bad blocks using the BAD utility.

9. To exit BRU after you have finished copying all the backup sets you need, type CTRL/Z in response to the BRU prompt.

At this point, you have completed the tape-to-disk copy and are ready to generate your RSX-11M system. Before you begin generating your system, it is important that you read Chapter 3 for details on the structure of SYSGEN.

2.3.2.7 Copying the RL01/02 800 bpi Magnetic Tape Kit On-Line - use the following procedure to copy the RL01/02 800 bpi tape kit using the host computer on line. You must use a disk copy of the distribution kit to generate an RSX-11M system. The tape kit may serve as the permanent backup copy. The output disk or the scratch disk referred to in this section is the blank disk you intend to use for the target system disk.

You will need six scratch RL01 or RL02 disks to copy the entire tape kit. (Place a physical label on each disk so that the scratch disks represent the backup set names in the distribution kit.) However, only the first three backup sets (RSXM35, EXCPRV, and RLUTIL) are used during a system generation. See the post-system generation guidelines in Chapter 6 to determine whether or not you need to copy the three remaining backup sets.

You should check the scratch disks for bad blocks (using the BAD utility) before copying the distribution kit to it. Refer to the RSX-11M/M-PLUS Utilities Manual for details on using BAD and FMT.

To copy your distribution tapes to disk using an on-line system, perform the following steps:

1. If you are using a multiuser system, allocate the appropriate disk and tape drives for the media to be used. For example, if you load your distribution tapes on a TU16 magnetic tape drive and copy the tapes to either RL01s or RL02s, allocate the devices as follows:

```
>ALL DL0:
>ALL MM0:
```

2. Load the first distribution tape, labelled RSXM35, on the drive.

3. Load the scratch disk physically labelled RSXM35 in the appropriate drive and spin up the disk.

NOTE

The disk volume should not be mounted. If the disk is mounted as a Files-11 device, BRU will issue the following warning message:

```
BRU - *FATAL* - Privilege violation
```

4. Invoke the Backup and Restore Utility (BRU) and enter the command line to copy the tape to disk. For example, enter the following command line to BRU:

```
>BRU
BRU>/BAC:RSXM35/INI/REW/DEN:800/VER
From:    MM0:
To:      DL0:

BRU - Starting Tape 1 on MM0:
```

The BRU /BAC (backup set) switch specifies the backup set to be copied.

The BRU /INI (initialize) switch initializes the disk volume to which BRU is copying.

The BRU /REW (rewind) switch ensures that the tape is completely rewound before BRU begins to copy.

The BRU /DEN (density) switch specifies the density (bpi) at which the tape was written.

The BRU /VER (verify) switch causes BRU to verify the data after it is copied. BRU issues the following messages indicating that it has begun to verify the data copied:

```
BRU - End of Tape 1 on MM0:
BRU - Starting verify pass Tape 1 on MM0:
```

NOTE

If the verify fails, do not attempt the system generation without first retrying the backup operation. If the verify fails again, retry the backup operation using a new output disk. If the verify fails once again, it is likely that either your distribution kit is defective and should be replaced or your hardware needs to be checked.

5. After the RSXM35 backup set portion of the tape has been successfully copied to the disk, BRU issues the following messages at your terminal:

```
BRU - End of Tape 1 on MM0:
BRU - Completed
```

6. Remove the first disk labelled RSXM35 from the drive, replace it with the second scratch disk labelled EXCPRV, and spin up the disk.

7. Enter the command line to BRU to copy the EXCPRV backup set portion of the distribution tape to disk:

```
BRU>/BAC:EXCPRV/INI/DEN:800/VER
From:    MM0:
To:      DL0:

BRU - Starting Tape 1 on MM0:
```

The BRU /REW switch is not necessary because the tape should already be correctly positioned to copy the EXCPRV backup set portion of the distribution tape.

The following warning message from BRU reminds you that the backup set being copied is not hardware bootable:

```
BRU - This disk will not contain a hardware bootable system
```

Only the baseline disk is hardware bootable in the RL01/02 distribution kit. Therefore, the warnings appear when BRU is copying all but the baseline disk (RSXM35).

8. After the EXCPRV backup set portion of the distribution tape has been successfully copied to the disk, BRU issues the following messages at you terminal:

```
BRU - End of Tape 1 on MM0:
BRU - Starting verify pass Tape 1 on MM0:
BRU - End of Tape 1 on MM0:
BRU - Completed
```

9. Repeat steps 6, 7, and 8 until you have sucessfully copied the RLUTIL backup set portion of the distribution tape onto a scratch disk of the same name (the third backup set and disk).

10. Remove the first distribution tape from the drive and replace it with the second tape labelled MCRSRC.

    Remove the disk labelled RLUTIL from the drive and replace it with the next scratch disk, labelled MCRSRC, and spin up the disk.

11. Enter the command line to BRU to copy the MCRSRC backup set portion of the second distribution tape:

```
BRU>/BAC:MCRSRC/INI/REW/DEN:800/VER
From:    MM0:
To:      DL0:
```

12. To copy the two remaining backup sets on the second distribution tape to the two scratch disks, simply repeat steps 6, 7, and 8 and replace the backup set label in the BRU command line with the backup set label of the portion of the distribution tape to be copied. Table 2-1 lists the RL01/02 backup set names in the order that you should copy them. Be sure that the scratch disks to which you are copying each backup set have been checked for bad blocks using the BAD utility.

13. To exit BRU after you have finished copying all the backup sets you need, type CTRL/Z in response to the BRU prompt.

At this point, you have completed the tape-to-disk copy and are ready to generate your RSX-11M system. Before you begin generating your system, it is important that you read Chapter 3 for details on the structure of SYSGEN.

2.3.2.8 Copying the RL01/02 Disk Kit On-Line - Use the following procedure to copy the RL01/02 disk kit using the host computer on line. The output disk or the scratch disk referred to in this section is the blank disk you intend to use for the target system disk.

You will need six scratch RL01 or RL02 disks to copy the entire distribution kit. (Place a physical label on each disk so that the scratch disks represent the labels on the respective disks in the distribution kit.) However, only the first three backup sets (RSXM35, EXCPRV, and RLUTIL) are used during a system generation. See the post-system generation guidelines in Chapter 6 to determine whether or not you need to copy the three remaining backup sets.

You should check the scratch disks for bad blocks (using the BAD utility) before copying the distribution kit to it. Refer to the RSX-11M/M-PLUS Utilities Manual for details on using BAD and FMT.

To copy your distribution kit on an on-line system, perform the following steps:

1. If you are using a multiuser system, allocate the appropriate disk drives for the media to be used. For example, allocate the devices as follows:

```
>ALL DL0:
>ALL DL1:
```

2. Load the distribution disk physically labelled RSXM35 in DL0:, then load the scratch disk, labelled RSXM35, in DL1:, and spin up both disks.

NOTE

The disk volume should not be mounted. If the disk is mounted as a Files-11 device, BRU will issue the following warning message:

```
BRU - *FATAL* - Privilege violation
```

When copying the distribution disks, it is a good idea to write protect the disk from which you are copying data.

3. Invoke the Backup and Restore Utility (BRU) and enter the command line to copy the disk. For example, enter the following command line to BRU:

```
>BRU
BRU>/INI/VER
From:    DL0:
To:      DL1:
```

The BRU /INI (initialize) switch initializes the disk volume to which BRU is copying.

The BRU /VER (verify) switch causes BRU to verify the data after it is copied. BRU issues the following message indicating that it has begun to verify the data copied:

```
BRU - Starting verify pass
```

NOTE

If the verify fails, do not attempt the system generation without first retrying the backup operation. If the verify fails again, retry the backup operation using a new output disk. If the verify fails once again, it is likely that either your distribution kit is defective and should be replaced or your hardware needs to be checked.

4. When the disk is successfully copied and verified, BRU issues the following message:

   BRU - Completed

   Spin down the disks and remove them. Replace the distribution disk with the next one to be copied. Replace the new disk copy with the next scratch disk. Spin up both disks again remembering to write-protect the disk from which you are copying data.

5. Enter the command line to BRU to copy the next distribution disk:

```
BRU>/INI/VER
From:   DL0:
To:     DL1:
```

   The following warning message from BRU reminds you that the disk being copied is not hardware bootable:

   BRU - This disk will not contain a hardware bootable system

   Only the baseline disk is hardware bootable in the RL01/02 distribution kit. Therefore, the warnings appear when BRU is copying all but the baseline disk (RSXM35).

   When the disk is successfully copied, BRU returns the following messages to indicate that it has finished:

```
BRU - Starting verify pass
BRU - Completed
```

   You may then unload the distribution disk and the new disk backup set.

6. To copy the remaining four distribution disks, repeat steps 4 and 5 with each remaining distribution disk you need to copy for your SYSGEN.

7. To exit BRU after you have finished copying all the backup sets you need, type CTRL/Z in response to BRU prompt.

At this point, you have completed the disk-to-disk copy of the distribution kit and are ready to generate your RSX-11M system. Before you begin generating your system, it is important that you read Chapter 3 for details on the structure of SYSGEN.

CHAPTER 3

STRUCTURE AND CONCEPTS OF SYSGEN

The system generation procedure, called SYSGEN, is a series of related Indirect command files. SYSGEN displays questions that require you to provide information concerning your target system hardware, Executive options, and general system features. SYSGEN uses that information to assemble and task build an RSX-11M operating system specifically tailored to your needs.

This chapter discusses the general concepts and structure of SYSGEN. It separates SYSGEN into its logical parts and defines the purpose of each. This chapter also describes options that add flexibility and ease of use to the SYSGEN procedure. These options allow you to answer a minimum number of questions.

3.1 THE LOGICAL PARTS OF SYSGEN

There are three major parts to SYSGEN called phases. These three phases divide SYSGEN logically, based on the major activity in each phase. Each phase of SYSGEN requires that you answer a series of questions. Those answers supply data necessary for creating specific files during each phase of SYSGEN. SYSGEN then uses those files to produce an operating system that runs on your PDP-11 processor.

3.1.1 Phase I

Phase I is the assembly phase of SYSGEN. After you answer the questions in Phase I, SYSGEN uses your responses to assemble the Executive, a subset of MCR modules, the device drivers, and any industrial or laboratory I/O subsystems you may select.

Phase I is the largest of the three phases of SYSGEN; it has more questions than the other SYSGEN phases. These questions are logically divided into seven sections. Each section focuses on specific function of your RSX-11M system.

SYSGEN pauses at the end of some sections to allow you the option to go back and correct any mistakes you may have made in a particular section without having to answer again all of the questions prior to that section. In this way, you can define your RSX-11M system section by section rather than all at once. (See Section 3.4.1.)

Table 3-1 lists the seven sections in Phase I and their respective functions.

Table 3-1
Phase I Sections and Functions

Section	Function
Setup Section	Defines how Phase I executes and the method for input
Target Configuration Section	Defines the hardware characteristics of the target system
Host Configuration Section	Determines how to handle assembly and map listings
Executive Options Section	Defines the features you want included in your target System's RSX-11M Executive
Terminal Driver Options Section	Defines the type of terminal driver you want in your target system as well as the software features you want the terminal driver to support
System Options Section	Defines general system features, some privileged tasks, and specific system libraries to be included in your target system
Peripheral Options Section	Defines control information for peripheral devices included in your target system

At the end of Phase I, SYSGEN has produced object and command files to be used as input to Phase II.

Chapter 4 contains more information, including all of the questions, relating to SYSGEN Phase I.

3.1.2 Phase II

Phase II is the task-build phase of SYSGEN. After you respond to the questions in Phase II, SYSGEN uses your responses to task-build the device drivers and privileged task images.

NOTE

SYSGEN always invokes the V4.1 Task Builder (TKB) distributed on your kit. The new TKB is installed as task ...TKL. If you are doing a on-line SYSGEN, other system users can still use the system's TKB without any interference from SYSGEN.

Phase II is divided into nine sections, according to the particular processing activity. Some of the processing during Phase II does not require you to answer questions. Therefore, even though there are nine logical sections to Phase II, only five of those sections contain questions.

Table 3-2 lists the nine sections in Phase II with their respective functions.

Table 3-2
Phase II Sections and Functions

Section	Function
Setup Section	Defines how Phase II executes, the method for input and the saved answer files that apply.
(Library Build Section)[1]	Creates object libraries and adds to existing libraries.
Executive Task-Build Section	Task-builds the RSX-11M Executive.
(System Image Creation Section)[1]	Creates the system image file RSX11M.SYS.
(Full-Duplex Terminal Driver Task-Build Section)[1]	Task-builds the full-duplex terminal driver (optional).
Loadable Driver Task-Build Section	Task-builds any loadable device drivers.
(Common Block Task-Build Section)[1]	Task-builds the optional FCS resident library and industrial or laboratory device common blocks.
Privileged Task-Build Section	Task-builds privileged and system tasks.
System VMR Section	Creates the VMR command file SYSVMR.CMD, and runs VMR to augment the system image.

1. These sections do not contain questions.

At the end of Phase II, SYSGEN has produced a bootable system image on which you can begin to run tasks.

Chapter 5 contains more information, including all of the questions, relating to SYSGEN Phase II.

3.1.3 VMR

The System VMR Section is a vital step in SYSGEN Phase II. During this part of Phase II, SYSGEN creates a file called SYSVMR.CMD that augments the system image file using Virtual Monitor Console Routine (VMR) commands. VMR commands act on the file image on disk, whereas MCR commands act on the memory-resident system. (See Chapter 10 in the RSX-11M/M-PLUS System Management Guide for VMR command descriptions.)

After creating SYSVMR.CMD, SYSGEN asks if you wish to edit it. If you indicate that you wish to edit SYSVMR.CMD, SYSGEN pauses to allow you to do so. SYSVMR.CMD does the following:

- Extends pool size
- Creates memory partitions
- Loads all loadable drivers
- Installs the file system processor (F11ACP)
- Installs privileged and system tasks
- Sets system parameters

If you are generating your target system in a stand-alone environment, SYSGEN invokes SYSVMR.CMD during the System VMR Section. When Phase II ends you are ready to bootstrap your new RSX-11M system.

However, if you are generating your target system from an on-line host system, the System VMR Section completes without invoking SYSVMR.CMD. The reason for this is that you must use V4.1 of VMR and, in an on-line environment, SYSGEN cannot tell which version of VMR your on-line system is running.

See Chapter 5 for more information on executing VMR from an on-line system.

3.1.4 Phase III

Phase III is a general task-building phase of SYSGEN. Generally, after the first two phases of SYSGEN have completed and you have saved and bootstrapped the new system, you are ready to invoke SYSGEN Phase III. (See the SAVE command in either the RSX-11M/M-PLUS System Management Guide or the RSX-11M/M-PLUS MCR Operations Manual.)

In SYSGEN Phase III, you can task-build any privileged or nonprivileged RSX-11M task. Phase III is also useful for rebuilding RSX-11M tasks that you have patched.

Phase III allows you to rebuild some tasks to link to specific libraries (such as a resident FCS library), if your target system has such support. (Linking tasks to resident libraries can make the task images smaller, an obvious advantage when memory size is a limitation.)

Chapter 7 contains more information, including all of the questions, relating to SYSGEN Phase III.

3.2 SYSGEN INDIRECT COMMAND FILES

As stated at the beginning of this chapter, SYSGEN is a series of related Indirect command files. An Indirect command file is a text file containing commands interpreted by the Indirect Command Processor.

Three major Indirect command files control SYSGEN execution:

- SYSGEN.CMD controls execution of Phase I
- SYSGEN2.CMD controls execution of Phase II
- SYSGEN3.CMD controls execution of Phase III

To invoke any Indirect command file, enter

```
>@filename
```

from your terminal. It is not necessary to include the file type .CMD when invoking Indirect command files.

Phases I, II, and III of SYSGEN reside in UIC [200,200]. However, while it runs, SYSGEN resets the UIC. If you exit SYSGEN and want to restart, be sure to set your UIC to [200,200].

3.2.1 Independent SYSGEN Command Files

Some SYSGEN files can or must be invoked outside the normal SYSGEN procedure. For example, to rebuild a particular loadable device driver, you can invoke the file SGNBLDDRV.CMD without having to go through an entire SYSGEN. When you invoke any of these files, you must answer questions that supply the necessary input to the particular file.

Those command files that can or must be invoked outside of SYSGEN are:

- SGNBLDDRV.CMD can be invoked outside of SYSGEN to build device drivers
- SGNKLAB.CMD must be invoked outside of SYSGEN to build any K-series laboratory devices
- BLDLAINIT.CMD can be invoked outside of SYSGEN to task-build the LPA11-K device initialization task. The microcode that must be loaded into the LPA11-K is selected during this procedure.

3.3 FORMAT OF SYSGEN QUESTIONS

SYSGEN questions allow you to select the features you want for your target system. Based on your responses, SYSGEN generates various command files that control the assembly and task building of your RSX-11M system.

The Indirect Command Processor determines the format of SYSGEN questions.

The general format for SYSGEN questions is an asterisk followed by the question number, the text of the question, and a prompt (contained inside brackets) indicating the type of response required. Prompts in SYSGEN questions contain key letters that indicate how to respond to the question. See the RSX-11M/M-PLUS MCR Operations Manual for a complete description of question formats in an Indirect command file.

SYSGEN questions require one of the following types of response:

- An ASCII string response
- A logical response - Y (for yes) or N (for no)
- A numeric response

Most SYSGEN questions have an implied response, known as the default. The default is the assumption made by SYSGEN if a particular option is not explicitly specified. Many of the SYSGEN questions contain the default response within brackets immediately following the text of the question. The default response appears in a given question indicates the type of response required for that question (ASCII string, logical, or numeric).

Press the RETURN key to select the default response for any SYSGEN question (unless there is no default for that question).

The following is a typical SYSGEN question requiring an ASCII string response:

```
* 8.  Name of input saved answer file [D:  SYSSAVED.CMD] [S]:
```

The prompt [S] at the end of the above question indicates that the question should be answered with an ASCII string -- in this case, a file name. The default appears in this question (indicated by the key letter D:) within the first set of brackets. Press the RETURN key to select the default file name of SYSSAVED.CMD for the input saved answer file.

The following is a typical SYSGEN question requiring a Yes or No (logical) response:

```
* 8.  Do you want DIGITAL Command Language (DCL)? [Y/N]:
```

The prompt [Y/N] at the end of the question indicates that the response should be either a Y (for Yes) or an N (for No). The implied default response for this type of question is No, unless explicitly stated otherwise. Some SYSGEN questions requiring a logical Yes or No response display an explicit default (indicated by the key D:).

The following is a typical SYSGEN question requiring a numeric response:

```
* 44.  Swapping priority [D R:1.-20.  D:5.]:
```

The prompt at the end of the question indicates that the question requires a numeric response. The first key letter D inside the bracket indicates that the response is a decimal number. The second key letter R indicates that the range for the response is from 1 through 20. The third key letter D indicates that the default response is 5.

Press the RETURN key to enter the default value of 5.

The questions in the Peripheral Options Section of SYSGEN Phase I (see Section 4.8) are more complicated than the other SYSGEN questions. During this part of Phase I, SYSGEN provides additional information on how to answer the questions. The following is a typical question from the Peripheral Options Section:

```
Enter [L/R,] vector, CSR, number of drives, unit number of first drive,
[O=offset recovery support/No=no support] for:

* 2.  DB controller 0 [D: 254,176700,,0,O]:
```

The information on the line preceding the above question corresponds to the default field of the question. The first field [L/R], allows you to choose whether the driver for the DB controller is loadable (L) or resident (R). (You determine whether the default for all drivers is loadable or resident earlier in Phase I.)

The value 254 in the default field of the question is the vector address. The value 176700 is the default CSR address. The two successive commas following the CSR address imply that between them should be the number of drives. The description in the text for the question states that there is no default for this value; it must be explicitly entered. The zero following the two commas is the default unit number for the first drive. Finally, the letter O in the last position of the default field indicates that offset recovery is the default.

Thus if you were to select all of the possible defaults for the DB controller, you would enter two commas (,,) followed by the explicit number of drives (the range is from 1 through 8). So your response to the question would look like the following:

```
* 2.  DB controller 0 [D: 254,176700,,0,O]:  ,,4
```

Everything after the number 4 in your response is implied and need not be entered when you are selecting the defaults. The two initial commas are necessary, however, to locate the value for the number of drives.

When answering the questions in the Peripheral Options Section, be sure to read the accompanying text carefully to avoid mistakes.

When you answer a question with an incorrect value, SYSGEN displays a message describing the error, suggests a procedure to correct the problem, and repeats the question.

Error messages appear alphabetically in Chapter 8.

3.4 LOGICAL ORDER OF SYSGEN QUESTIONS

Many of the options in SYSGEN are interdependent. Some options that you select automatically include other options. In such cases, SYSGEN prints a message on your terminal, informing you that these other options have been included. Furthermore, when you select an option that requires an option you did not previously select, SYSGEN automatically includes the formerly excluded option and informs you that it has been included.

Other options are mutually exclusive. Therefore, even though SYSGEN questions are numbered in the order of their occurrence in the SYSGEN command files, not all SYSGEN questions appear on your terminal.

For example, if you select DBMS-11 support in Question 1 of the Executive Option Section of Phase I, SYSGEN automatically includes support for Files-11 ACP (Question 2 of the Executive Options Section) and displays a message that Files-11 support has been included:

```
* 1. Include support for DBMS-11? [Y/N]: Y
     Files-11 ACP support will be included.
```

If you do not select DBMS-11 support, SYSGEN asks Question 2:

```
* 1.  Include support for DBMS-11? [Y/N]: N

* 2.  Files-11 ACP? [Y/N]:
```

3.4.1 Breakpoints

During execution of Phase I and Phase II, SYSGEN provides breakpoints. Breakpoints in SYSGEN are pauses at logical points during execution. There are two types of breakpoints:

- End-of-Section (EOS) breakpoints
- End-of-Execution (EOX) breakpoints

These breakpoints cause SYSGEN to pause periodically during processing to let you review the process just completed (for example, the assembly of the Executive source files). SYSGEN allows you to override breakpoints so that SYSGEN can execute unattended when that mode of operation is appropriate.

3.4.1.1 EOS Breakpoints - End-of-Section (EOS) breakpoints are pauses at the end of each section of the SYSGEN procedure. For instance, there are seven sections in Phase I. You can choose to answer the questions in all sections without EOS pauses, or you can direct SYSGEN to pause at each EOS breakpoint.

An End-of-Section breakpoint appears as a question from SYSGEN, for example:

```
*EOS* Do you want to: <CR>-continue R-repeat section E-exit P-pause [S]:
```

This breakpoint in the SYSGEN procedure allows you to:

- Continue
- Repeat the section of questions, perhaps to correct answers
- Exit the SYSGEN procedure
- Suspend SYSGEN processing

Note that if you type CTRL/Z in response to any question, SYSGEN exits cleanly (that is, all files are closed by the Indirect Command Processor).

3.4.1.2 EOX Breakpoints - End-of-Execution (EOX) breakpoints are pauses after significant SYSGEN operations, such as a MACRO assembly or a task-build. SYSGEN pauses at these points to ensure successful completion of the operation. When you know that the operation will execute succesafully, you can direct SYSGEN to continue processing without the breakpoint pauses.

The following EOX breakpoint question appears after assembly of the Executive:

```
*EOX* Did the Executive assemble correctly? [Y/N]:
```

If your response is Y (for yes), SYSGEN continues to assemble a subset of MCR modules. If there are errors in the assembly, your response should be N (for No), at which point SYSGEN informs you that it is pausing to allow you to correct the problem.

3.4.2 Chaining

SYSGEN normally exits at the end of Phase I execution. However, an option in the Setup Question Section of Phase I allows SYSGEN to automatically invoke Phase II when Phase I completes. This process is called chaining. When SYSGEN chains to Phase II, it carries the information supplied in the Setup Section of Phase I to Phase II, thereby allowing SYSGEN to bypass many of the Setup Questions in Phase II.

Chaining is a particularly useful option when you use an input saved answer file (see Section 3.5) or a Standard Function System (see Section 3.6.2). When you use a saved answer file and select the chaining option, you can generate a system without having to spend much time answering questions at the terminal.

NOTE

Chaining is only a valid transition from Phase I to Phase II. SYSGEN cannot chain from Phase II to Phase III.

3.5 SAVED ANSWER FILES

Whenever you answer a question during Phase I and Phase II, SYSGEN saves your responses by converting them to symbol definitions and outputs them in saved answer files. (Appendix A lists the saved answer symbol definitions.) You can use a saved answer file as input to another SYSGEN.

When you use saved answer files as input, SYSGEN uses the symbol definitions in the saved answer files as answers to SYSGEN questions. The questions do not appear on the terminal. If SYSGEN encounters a question for which there is no saved answer, it prints the question on the terminal and waits for a response.

Depending upon how you answer the Setup Questions in SYSGEN Phase I and (optionally) in Phase II, you may create either a single file containing saved answers for both Phase I and Phase II or you may have one saved answer file for Phase I and a separate saved answer file for Phase II. In either case, SYSGEN always saves your responses in a file.

NOTE

SYSGEN does not save responses to questions in the Peripheral Options Section pertaining to ICR/ICS, DSS/DRS, or IP11/IP300 devices. SYSGEN also does not save responses to queations pertaining to the task-building of the LPA initialization code.

SYSGEN asks you to specify a name for the saved answer file. You may give the saved answer file (or files) any name or file type that you wish. If you want to place your saved answer files in a different UIC other than the default [200,200] and if that UIC does not already exist, you must first create the UIC using the MCR UFD command. For information on the UFD command, see the RSX-11M/M-PLUS MCR Operations Manual.

Conventions governing file names for saved answer files are the same as for all RSX-11M file names. Refer to the RSX-11M/M-PLUS Utilities Manual for more information on file names.

SYSGEN asks the following question in the Phase I and Phase II Setup Section to allow you to name your saved answer file:

```
* 5.  Name of output saved answer file [D:  SYSSAVED.CMD] [S]:
```

SYSGEN prints a message on the terminal letting you know the name of the output saved answer file to which it saves your responses.

If the system generation process is aborted for any reason (for example, if you exit by typing CTRL/Z in response to any question), the output saved answer file is closed at the point in Phase I or Phase II where it was interrupted. If you use that output saved answer file for input later on, SYSGEN accesses the file, scans it, and prints a message that the file may be incomplete. That file may still be successfully used for input up to the point where that last question was answered in the aborted SYSGEN. (Before restarting SYSGEN, remember to reset your UIC to [200,200].) At that point SYSGEN begins explicitly asking questions again and creates a new saved answer output file.

NOTE

If the output saved answer file becomes locked when you abort a SYSGEN, you can unlock the file using the PIP /UN switch. See the RSX-11M/M-PLUS Utilities Manual for details on using the PIP /UN switch.

Saved answer files have a variety of uses. For instance, you can create a saved answer file that defines options for several different target configurations; or you can create multiple saved answer files that specify different options for the same PDP-11 processor. See Section 3.6.1 for details on creating saved answer files.

You can create saved answer files without having to fully execute SYSGEN by selecting the option in the Phase I Setup Section that inhibits execution of MCR commands in SYSGEN. Section 3.6 describes that option in detail.

3.6 VARIOUS APPROACHES TO SYSGEN

Some of the options available in the Setup Section of Phase I and Phase II can make it significantly easier to generate your system, particularly if you are generating an RSX-11M system for the first time. This section describes those options and how they can facilitate the SYSGEN process for you.

3.6.1 SYSGEN with MCR Inhibited (PREPGEN)

During the Setup Section of Phase I, SYSGEN asks the following question:

```
* 3.  Do you want to inhibit execution of MCR commands (PREPGEN)? [Y/N]:
```

This option allows you to perform the logical SYSGEN procedure, answer SYSGEN questions, and create a saved answer file that you can use as input to SYSGEN at a more convenient time when you actually generate your system.

If you respond Yes to this option, SYSGEN displays the questions for you to answer and creates a saved answer file of your responses. However, SYSGEN does not process any MCR commands (such as PIP, MAC, and TKB) as it normally would and, therefore, does not create your system.

If you respond No to this question, SYSGEN displays questions for you to answer, creates a saved answer file of your responses, executes MCR commands and generates your target RSX-11M system.

If you have never generated an RSX-11M system, or if you are unfamiliar with RSX-11M V4.1, you may find it helpful to perform a PREPGEN the first time you perform the SYSGEN procedure.

3.6.2 The Standard Function System

As previously explained, SYSGEN lets you create your own saved answer files. In addition, the distribution kit contains a saved answer file, called SGNSTAND.CMD. SYSGEN uses SGNSTAND.CMD to generate a Standard Function System when you select it as an option.

When you select the option in Phase I for a Standard Function System, SYSGEN creates a mapped RSX-11M system that includes nearly all available options. The Standard Function System provides responses for SYSGEN questions pertaining to software.

CAUTION

Do not modify the contents of SGNSTAND.CMD.

This means that SYSGEN automatically answers most of the Phase I and Phase II questions.

The Standard Function System builds an RSX-11M system with maximum functionality including:

- The full-duplex terminal driver (with all valid options)
- The MIDDLE version of F11ACP
- Support for all layered products
- The CO: and NL: pseudo devices
- ANSI magtape support
- FCS resident library support
- Support for all selected loadable drivers in DRVPAR
- Default values for system (numeric) parameters (such as swapping priority)

The only SYSGEN option restricted from the Standard Function System is support for user-written drivers. In addition, when you select the Standard Function System, SYSGEN bypasses EOS and EOX breakpoints and does not pause for you to edit any files.

For the full list of options included in the Standard Function System, see Table 3-3.

You can select some SYSGEN options when you choose the Standard Function System. SYSGEN displays those options at your terminal. Some user-selectable options are:

- All Target Configuration Section questions
- The Executive Debugging Tool (XDT)
- The memory crash dump device
- Communications products (such as DECnet)
- A user-defined system name

If you are unsure of which options to choose for your system, you can select the Standard Function System to quickly generate a usable RSX-11M system. As you become familiar with your system requirements, you can make more comfortable decisions about which system options are needed and which options may be unnecessary. You can then create a saved answer file geared more closely to your specific system requirements and then generate a new system using that saved answer file.

The Standard Function System option works like other saved answer files since SYSGEN uses the symbols defined in that file as responses. SYSGEN does not display questions on your terminal that are answered by a saved answer file.

Whenever you select the Standard Function System, you may find it helpful to also select the chaining option.

Table 3-3
Options Included in the Standard Function System

Setup Section

Question	Option
5	Mapped system

Target Configuration Section

Question	Option	Question	Option
4	K-series device support	15	CO: and NL: device support

Executive Options Section

Question	Option	Question	Option
1	DBMS-11 support	35	Queue manager and queued print spooler
2	Files-11 ACP	36	Group global event flags
3	RMS bucket locking and placement control	37	All system directives: Get Partion Parameters Get Task Parameters Send/Receive Alter Priority Extend Task Connect to Interrupt Vector Get Sense Switch Set System Time Stop Bit Specify Requested Exit AST Parent/Offspring Tasking Parent/Offspring Tasking with Chaining
4	Non-resident tasks		
5	Loadable task loader		
6	Executive common		
7	Memory management (PLAS) directives		
8	Send/Receive By Reference directives		
9	Get Mapping Context directive	38	5 pre-allocated QIO packets
10	Address checking	39	33-word size for the data tranafer vector
11	I/O rundown		
12	Multiuser protection	40	5-tick interval for round-robin scheduling
13	ANSI magtape ACP	41	Highest priority class of 150 for round-robin scheduling
14	On-line formatting (FMT) or diagnostic QIOs		

(continued on next page)

Table 3-3 (Cont.)
Options Included in the Standard Function System

Executive Options Section

Question	Option	Question	Option
15	Loadable device drivers	42	Lowest priority class of 1 for round-robin scheduling
16	All drivers loadable by default	43	Executive level disk swapping interval of 30
17	Asynchronous System Traps (AST) support	44	Priority of 5 for disk swapping
19	Task termination and device not ready messages (TKTN)	46	30-second interval between printer not ready messages
20	Power fail recovery	47	30-second interval between card reader not ready messages
21	Install, request, and remove on exit	48	System crash register and stack dump device CSR value of 177564
22	Large (20K) Executive	49	Checkpointing
23	Logical device assignment	50	Checkpointing with a system checkpoint file
24	Error logging support	51	Crash Dump Analysis (CDA)
28	Disk writecheck	52	CDA output notification device CSR value of 117564
29	Software write-lock support		
31	Rotating pattern in data lights		
33	System-controlled partitions		
34	Shuffler support		

Terminal Driver Options Section

Question	Option	Question	Option
1C	Full-duplex terminal driver Terminal Driver Options	13	Get terminal driver options
2	120-second unsolicited input timeout value	14	Hold-screen mode
3	Pass form feeds directly to the terminal	15	Transparant read/write
4	Automatic carriage return/line feed	16	Settable case conversion for input
		17	Read after prompt

(continued on next page)

Table 3-3 (Cont.)
Options Included in the Standard Function System

Terminal Driver Options Section

Question	Option	Question	Option
5	Task checkpointable during terminal input	18	Read with no echo
6	Unsolicited input character AST	19	Read with special terminator
7	Write with CTRL/O cancellation	20	CRT rubout support
8	Breakthrough write	21	Terminal-host synchronization
9	CTRL/R support	22	User terminal input buffering
10	Escape sequence handling	23	Variable-length terminal input buffering
11	Get multiple characteristics	24	LA30P support
12	Set multiple characteristics	25	Hardware unrecoverable input error notification
		26	Device independent cursor positioning

Systems Options Section

Question	Option	Question	Option
3	FCS resident library	8	Digital Command Language (DCL)
4C	Middle FCP (FCPMDL)	9	Support for 2 user-written CLIs
5	Post Mortem Dump (PMD)	10	Pool monitoring and low pool recovery
6	Resource Monitoring Display task (RMD)		

Loadable Driver Task-Build Section (Phase 2)

Question	Option
3	NL: as the map device

3.6.3 The Autoconfigure Option

Of all the questions to be answered in SYSGEN, the most complicated are those of the Peripheral Options Section in Phase I. It is not always convenient to obtain the correct CSR and vector addresses for your specific peripheral devices. Though SYSGEN provides default CSR and vector addresses for most devices, there is no guarantee that your devices correspond to those addresses.

To avoid that type of confusion, direct SYSGEN to Autoconfigure your hardware. The Autoconfigure option is the first option offered in the Setup Section of Phase I and is integrated with the SYSGEN procedure.

Autoconfigure is a valid option only if you are generating RSX-11M from the baseline system (located in UIC [1,54]) supplied with your RSX-11M V4.1 distribution kit. Typically, on-line systems (that is, systems running from other than the baseline system) have some disk, terminal, and CPU activity. Part of autoconfiguration involves a complex series of device interrupts, that require that there be no other activity on the system. Autoconfigure can accurately configure the hardware only when there is no pending I/O. In addition, to use the Autoconfigure results, the host system must be the same as the target system.

Autoconfigure determines the correct hardware configuration. This is a highly desirable option in all but two cases:

- Autoconfigure cannot be used when the host system is distinctly different from the target system configuration.
- Autoconfigure cannot be used when the hardware does not conform to the standard PDP-11 device configuration algorithm. If your hardware does not conform to this standard, please see Appendix E for information on determining the algorithm for your hardware.

Autoconfigure allows you to add or delete devices as well as override results. See Section 3.6.3.2.

3.6.3.1 What Autoconfigure Does - When you select the Autoconfigure option, SYSGEN automatically determines the correct hardware configuration of most (if not all) of your host system: the processor type, the CSR and vector addresses of your peripheral devices, and any optional hardware that may be present -- such as Floating Point or Extended Instruction Set hardware. SYSGEN displays complete information from the autoconfiguration at your terminal after the Autoconfigure has completed.

You may use the Autoconfigure results for responses to questions in the Target Configuration and Peripheral Options Section in Phase I. In this case, SYSGEN automatically answers (and, therefore, bypasses) any questions in those sections for which Autoconfigure results can be used as responses. You can also override the results of the Autoconfigure (see Section 3.6.3.2).

In addition to those devices that are automatically configured, you may add devices that Autoconfigure does not support. You can do this by answering Question 15 in the Target Configuration Section, entering the device names, and the number of controllers. (See the Target Configuration Section, Question 15 in Section 4.3 for more information on adding devices.)

Furthermore, if you use an input saved answer file containing a saved peripheral configuration and also Autoconfigure the host system hardware, SYSGEN makes a contiguous list of all of those devices. Where there are discrepancies between the devices in the saved answer file and the Autoconfigured list, the saved answer file always overrides the Autoconfigured list.

If SYSGEN fails to report Autoconfigure results, (described in Example 3-1) within one minute, then Autoconfigure has failed to configure your hardware. If this occurs, you must rebootstrap the baseline system and invoke SYSGEN again without using the Autoconfigure option. When SYSGEN fails to report Autoconfigure results, it is generally an indication that a severe hardware malfunction has occurred, or you have not adhered to the standard DIGITAL PDP-11 device configuration algorithm detailed in Appendix E.

Example 3-1 Sample Autoconfigure Output

```
Processor Type:  11/70                    Memory Size:  512. Kw

Options:

        Floating Point Processor (FP11)
        Extended Instruction Set (EIS)
        Extended (22-bit) Addressing
        Switch Register (SWR)
        Display Register
        Cache Memory
        Parity Memory

Name    Vector      CSR         Unit      Type      Remarks

DKA       220       177404
                                0         RK05
                                2         RK05
DMA       210       177440
                                0         RK06
                                1         RK06
                                2         RK07
RHA       224       172440
                                0_0       TU77      TM03
                                0_1       TU77      TM03
RHB       150       176300
                                0         RM03
RHC       204       176400
                                0         ML11A
RHD       254       176700
                                0         RP06
                                1         RP06
                                2         RP05
                                3         RP05      Dual access

DXA       264       177170
DTA       214       177342
LPA       200       177514
LPB       270       164004
YLA       060       177560
YLB       ???       175610                          Failed to interrupt
YMA       310       170500
YMB       314       170510
YMC       324       170520
YHA       340       160020
YHB       350       160040
YHC       360       160060
YHD       ???       160100                          Failed to interrupt
```

Example 3-2 lists all the remarks that may be output by Autoconfigure with the configuration information.

Example 3-2 Autoconfigure Remarks and Meanings

Remark	Meaning
Failed to interrupt	The specified device is either malfunctioning or the hardware configuration is nonstandard which causes Autoconfigure to report unreliable information. Autoconfigure will place three question marks (???) in the vector field.
Mixed MASSBUS devices	Autoconfigure has detected a MASSBUS controller configured with several classes of peripherals attached to the same controller, (such as RM03 and an RP06). Note: Mixed MASSBUS configurations are not supported by RSX-11M.
TM02 TM03 TM78	The type of magtape formatter associated with this slave drive. Magtape unit numbers are displayed in the format: Formatter Unit number, underscore, Slave Unit number (for example, 0_1).
Priority n	Autoconfigure has detected a device with an interrupt priority higher than expected. n is the actual interrupt priority.
Dual access	The specified unit has the Dual access option installed. Dual access allows a unit to be shared by two controllers. Note: Use of drives in dual-access mode is not supported on RSX-11M.
??? (in the vector field)	See Failed to interrupt.
Sector interleaved	The RS03 or RS04 displayed supports sector interleaving, which allows the unit to optimize data accesses.

3.6.3.2 Overriding Autoconfigure Results - When you select the Autoconfigure option, SYSGEN asks a second question that allows you to override the results of the Autoconfigure. This option directs SYSGEN to display the Autoconfigure results in the default field of each question where Autoconfigure would automatically provide a response. In other words, instead of directing SYSGEN to use Autoconfigure results as responses to the questions in the Target Configuration and Peripheral Options Sections without displaying them on the terminal, each SYSGEN question appears with the Autoconfigure results as the default instead of the standard default response. You may then examine the Autoconfigure results and either enter different values or press the RETURN key to input the Autoconfigure result.

If you choose not to override the results of Autoconfigure, SYSGEN automatically answers any question in the Target Configuration and Peripheral Option Sections, when Autoconfigure has provided responses. The only exception to this is Question 15 in the Target Configuration Section. This question always appears to allow you to add or delete devices from your configuration.

You can override Autoconfigure results to enter information not normally determined by Autoconfigure. For example, if your system has four RK06 drives, but one is down with serious hardware problems, Autoconfigure would only report finding three of them. However, if you know that the drive will be repaired soon, you can override the Autoconfigure results by entering 4 as the number of unit types for the RK06, instead of the default of 3 provided by Autoconfigure.

Furthermore, you can override Autoconfigure results so that you can generate a transportable system. For example, if your site has two PDP-11/34 processors but only one of them (that is, the host system) has cache memory you can override the results of Autoconfigure by deselecting the cache memory option to have an RSX-11M system that runs on either processor.

Table 3-4 lists the devices supported by the Autoconfigure option. Devices that are not listed in Table 3-4, as well as any malfunctioning devices, cannot be Autoconfigured.

NOTE

Your host system configuration must conform to the standard PDP-11 device configuration algorithm for Autoconfigure to report reliable information. (See Appendix E.)

3.6.4 Hardware Supported by Autoconfigure

Autoconfigure supports most standard devices supplied by DIGITAL. For those DIGITAL devices in your hardware configuration not supported by Autoconfigure, SYSGEN asks the appropriate question in the Peripheral Options Section to get the specific controller information for those devices.

Autoconfigure does not determine the number of units for DK, DP, DT, or MT devices. It does determine the CSR and vector addresses for those devices. SYSGEN asks the corresponding questions in the Peripheral Options Section that require you to input the number of units for those devices.

In addition, Autoconfigure only finds those RK05 drives that have disks in them and are up and spinning at the time of the Autoconfigure.

Table 3-4 is a list of the hardware supported by Autoconfigure. Refer to Appendix E for the algorithm used to assign addresses to devices attached to the UNIBUS or QBUS.

NOTE

Autoconfigure will only run on processors with Memory Management (mapped) hardware. Also, Autoconfigure only computes the line frequency of your processor if a KW11-P is present.

Table 3-4
Hardware Supported by Autoconfigure

Processors (with Memory Management hardware)	
PDP-11/23	
PDP-11/23-PLUS	22-Bit Addressing
MICRO/PDP-11	(Autoconfigure reports the MICRO/PDP-11 as an 11/23-PLUS.)
PDP-11/24	18 and 22-Bit Systems
PDP-11/34	
PDP-11/35	(Autoconfigure reports the 11/35 as an 11/40.)
PDP-11/40	
PDP-11/44	
PDP-11/45	
PDP-11/50	(Autoconfigure reports the 11/50 as an 11/45.)
PDP-11/55	(Autoconfigure reports the 11/55 as an 11/45.)
PDP-11/60	
PDP-11/70	

Processor/Memory Options	
FP-11	FPP - Floating Point Processor
KE-11E	EIS - Extended Instruction Set
KE-11A/B	EAE - Extended Arithmetic Element
	CIS - Commercial Instruction Set
	FIS - Floating Instruction Set
KW11-P	Programmable Clock
	Cache Memory
	Switch Register
	Display Register
	Parity Memory
KW11-W	Watchdog Timer

I/O Peripherals and Controllers	
CT	TA11 Tape Cassette
DB	RP04/05/06 Disk Drive
DD	TU58 Cartridge DECtape
DK	RK11/RK05
DL	RL11/RLV11/RL01 Disks (first controller only)
	RL211/RLV21/RLV12/RL02 Disks (first controller only)
DM	RK611/RK711 RK06/RK07 Disks
DP	RP11/RP02/RP03
DR	RM02/RM03/RM05/RM80/RP07 Disk Drives
DS	RS03/RS04 Fixed Head Disks
DT	TC11/TU56 DECtape

(continued on next page)

Table 3-4 (Cont.)
Hardware Supported by Autoconfigure

I/O Peripherals and Controllers (Cont.)	
DU	UDA50 (RA60/80/81) Controller RC25 Controller RQDX1 (RD51/RX50) Controller
DX	RX11/RX01 Floppy Disk (first controller only)
DY	RX211/RX02 Floppy Disk (first controller only)
EM	ML11 Non rotating Electronic Memory
LP	LP/LS/LV/11/LN01 Line Printer
MF	TU78/TM78 Magtape
MM	TU16/45/77/TE16 Magtape Drives
MS	TS11/TSV05/TU80 Magtape Drives
MT	TM11/TU10/TE10/TS03
PR	PR11/PC11 Paper Tape Reader
PP	PC11 Paper Tape Punch
RH	RH11/RH70 MASSBUS Controller
YH	DH11 Asynchronous Terminal Interface
YL	DL11-A/B Asynchronous Interface (including DLV)
YL	DL11-C/D/E Asynchronous Interface (including DLV)
YL	DL11-J Asynchronous Interface (including DLV)
YL	DL11-W Console Interface with/line clock
YM	DM11-BB Modem Controller for DH11
YZ	DZ11 Asynchronous Terminal Interface (including DZV)

CHAPTER 4

DETAILS OF SYSGEN PHASE I

This chapter describes the questions in SYSGEN Phase I. SYSGEN uses your responses to the questions in Phase I to assemble the source files for the Executive, device drivers, and any laboratory or industrial I/O subsystems you select. As explained earlier in Chapter 3, SYSGEN never asks all of the questions described in this chapter. Therefore, the questions do not always appear on your terminal in numerical sequence. As long as you know the Phase I section that the question appears in, you can locate the description of that question by its number.

The questions are logically divided into seven sections:

- Setup Section
- Target Configuration Section
- Host Configuration Section
- Executive Options Section
- Terminal Driver Options Section
- System Options Section
- Peripheral Options Section

Example 4-1 (at the end of this chapter) is an annotated terminal output from SYSGEN Phase I. The responses in the example are not necessarily the same as yours may be. However, the example will help you to follow the flow of questions from section to section.

Figure 4-1 shows the processing steps that take place during SYSGEN Phase I.

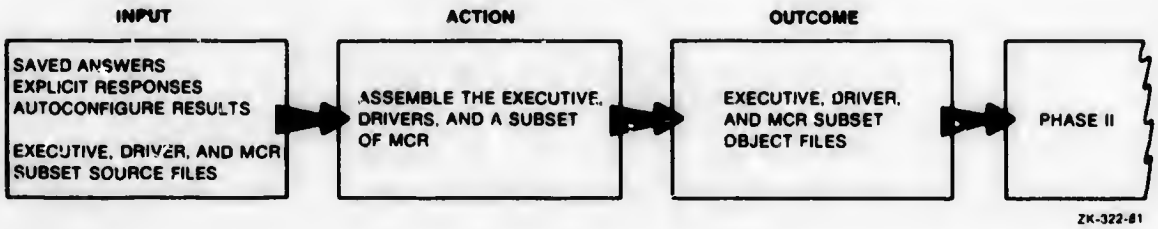

Figure 4-1 Processing Steps in SYSGEN Phase I

4.1 PREPARING FOR PHASE I

Before invoking SYSGEN, make sure you have done the following:

- If you are using a V4.0 host system, refer to the RSX-11M/RSX-11S Release Notes before beginning your system generation.

NOTE

To perform a SYSGEN, your host system must be mapped. If your host system is not mapped, SYSGEN will display the following message:

```
SYSGEN is not supported on
an unmapped host system.
```

Also, your host system must have at least 64K words of memory. If your system has less than 64K words of memory, SYSGEN will display the following message:

```
SYSGEN is not supported on a
host system with less than 64KW.
```

- If you generate your system from an on-line V4.1 host system, set your UIC to [200,200], assign the logical device SY: to your baseline disk, and invoke SYSGEN as follows:

```
>SET /UIC=[200,200]
>ASN ddu:=SY:  (where ddu: is the baseline disk, RSXM35)
>MOU ddu:RSXM35
>@SYSGEN
```

The host system must have a null device (NL:) for you to successfully generate an RSX-11M system.

- If you generate your system from a stand-alone host system, hardware bootstrap the baseline system (see Appendix B).

Then invoke SYSGEN as follows:

```
>@SYSGEN
```

Phase I begins now.

4.2 SETUP SECTION

This section of questions provides SYSGEN with specific processing information. In addition, depending on your responses, it can help to make your system generation significantly easier.

*** 1. Autoconfigure the host system hardware? [Y/N]:**

If you respond Yes to this question, SYSGEN automatically determines the exact hardware configuration of your host system: the processor type, the CSR and vector addresses of your peripheral devices, and any optional hardware that may be present -- such as Floating Point or Extended Instruction Set hardware. (See Section 3.6.3 for more information on Autoconfigure.)

SYSGEN displays results from the autoconfiguration at your terminal after Autoconfigure has completed. Table 3-3 lists the devices supported by Autoconfigure. Devices that are not listed in Table 3-3 as well as any malfunctioning devices cannot be autoconfigured.

NOTE

Your host system configuration must conform to the standard PDP-11 device configuration algorithm for Autoconfigure to report reliable information. (See Appendix E.)

If you choose this option, you may use the results of the autoconfiguration for responses to questions in the Target Configuration and Peripheral Options Sections. If you respond Yes to this question, and No to Question 2, SYSGEN bypasses any questions in the Peripheral Options and Target Configuration Sections for which Autoconfigure results can be used as responses.

This question only appears if you are generating an RSX-11M system from a mapped RSX-11M baseline system.

*** 2. Do you want to override Autoconfigure results? [Y/N]:**

This question appears only when you respond Yes to Question 1.

If you respond Yes to this question, you can override the Autoconfigure results. SYSGEN displays the results of the autoconfiguration in the default field of each Peripheral Options and Target Configuration question asked. You may then examine the Autoconfigure results and either modify them or press the RETURN key to take the default. (See Section 3.6.3 for more information.)

If you respond No to this question, Autoconfigure automatically answers the questions in the Target Configuration Section, except for the K-series question (Question 4) and Question 9 or 10 of that section.

SETUP (Cont.)

In addition to answering the Target Configuration Section questions, Autoconfigure automatically answers all the questions in the Peripheral Options Section for which Autoconfigure has results.

NOTE

Autoconfigure determines only the CSR and vector addresses for DK, DP, DT, and MT device types. It cannot determine the number of units for those devices. SYSGEN asks the corresponding questions in the Peripheral Options Section to allow you to enter the number of units for those devices.

In addition to those devices that are automatically configured, you may add devices that Autoconfigure does not support or are not present on the host system. You do this by answering Question 15 in the Target Configuration Section (this question is always asked), with the device names and number of controllers for those additional devices not listed by Autoconfigure. (See Question 15 for more information on adding devices. Also see Section 3.6.3)

*** 3. Do you want to inhibit execution of MCR commands (PREPGEN)? [Y/N]:**

If you respond Yes to this option, SYSGEN displays the questions for you to answer and creates a saved answer file of your responses. However, SYSGEN does not process any MCR commands as it normally would, and, therefore, does not create your system. When you are ready to generate you system, you can then use this saved answer file as input into SYSGEN.

It is recommended that you perform a PREPGEN first. Doing so has two advantages: first, it requires less time at your terminal to answer SYSGEN questions; second, if you are not satisfied with your system configuration, you can easily change your responses in the saved answer file rather than do another SYSGEN to change your system configuration.

When you perform a PREPGEN, SYSGEN:

- Does not make logical device assignments
- Does not delete files from previous SYSGENs
- Does not assemble files
- Does not create libraries

When you perform a PREPGEN, SYSGEN:

- Does create the resident driver data base file (SYSTB.MAC)
- Does create a partial, unusable Executive prefix file (RSXMC.MAC)

- Does create a saved answer file
- Does create the Executive task-build file
- Does create the full-duplex terminal driver task-build file (if you select the full-duplex terminal driver)
- Does create the Executive and driver assembly command files

If you select this option and if you are using an RL01/02 distribution kit, SYSGEN will mount the Executive source disk after you enter the drive containing this disk (Question 16). The Executive source disk in the RL01/02 kit is labelled EXCPRV.

If you respond No to this question, SYSGEN executes MCR commands and creates your system.

*** 4. Have you made a copy of the distribution kit? [Y/N]:**

A copy of the distribution kit ensures that there is a backup copy in case you inadvertently delete important files or data during the system generation process. A backup copy also serves as a base for future Autopatch updates.

If you respond No, SYSGEN displays the message:

> SGN -- You are or will be running on the original copy of the distribution kit. Make a copy via the standard procedure and restart.

SYSGEN then exits to allow you to copy the media.

Refer to Chapter 2 if you need help copying your distribution kit.

This question does not appear if you are generating an RSX-11S system from a host system other than RSX-11M. This question also does not appear if your response to Question 3 is Yes.

*** 5. Are you generating an unmapped system? [Y/N]:**

Respond Yes to this question if your target system processor does not include a Memory Management Unit (such as a KT-11) and if you intend to generate an unmapped system.

If you generate an unmapped target system from the mapped baseline system or from a mapped host system, you must invoke Phase III on the host system to task-build unmapped versions of EDI, PIP, and TKB (that is, before invoking Phase III on the target system).

*** 6. Use an input saved answer file? [Y/N]:**

Respond Yes to this question if you have previously created a saved answer file. This option lets you direct SYSGEN to use that file as input responses to the questions. Any SYSGEN question automatically answered by a saved answer file does not appear on your terminal.

SETUP (Cont.)

SYSGEN does not save responses to the Peripheral Options Section questions for the ICR/ICS, DSS/DSR, or IP11/IP300 devices; you must enter the responses for those devices.

*** 7. Name of input saved answer file [D: <default>]:**

SYSGEN displays this question only if you respond Yes to Question 6. If the file SYSSAVED.CMD exists in the current UFD, the default file name for the input saved answer file is SYSSAVED.CMD. Press the RETURN key to input the default filename of SYSSAVED.CMD.

If you have created a saved answer file having a different file name, you may enter the name of that file. The input saved answer file name must conform to the RSX-11M file-name standard.

If the specified file does not exist, SYSGEN repeats Question 7.

If you enter a response other than the default and omit a file type, SYSGEN assumes the file type .CMD.

If you are using an incomplete saved answer file for input, SYSGEN issues a message indicating that the file may be incomplete. In that case, when SYSGEN encounters a question for which your saved answer file does not have a response, SYSGEN displays that question on your terminal and waits for you to input a response.

*** 8. Do you want a Standard Function System? [Y/N]:**

This option allows you to direct SYSGEN to generate a mapped RSX-11M system having most of the available software options automatically included. Your target system should have at least 64K words of memeory if you intend to select this option.

If you respond Yes to this question, SYSGEN displays only those questions not defined in the Standard Function System.

If you respond No to this question, SYSGEN requires that you answer each question individually.

See Section 3.6.2 for more information on the Standard Function System. This question appears only if you are generating a mapped RSX-11M system and did not choose to use an input saved answer file.

*** 9. Name of output saved answer file [D: <default>]:**

This option lets you assign a file name to the output saved answer file (that is, the one created during the current SYSGEN).

The default name of the output saved answer file is the same as that of the name of the input saved answer file.

If you want to place your saved answer file in a UIC other than the default UIC ([200,200]), you must create that UIC using the MCR UFD command before beginning your SYSGEN if that UIC does not already exist on the RSXM35 disk. For more information on the MCR UFD command, see the RSX-11M/M-PLUS MCR Operations Manual.

If that UIC does exist, type in the UIC and the file name in response to the question.

Otherwise, if you answered No to Question 7 or if you selected the option for a Standard Function System, the default name of the output saved answer file is SYSSAVED.CMD.

If you enter a response other than the default and if you omit the file type, SYSGEN assumes the file type .CMD.

Press the RETURN key to select the default response.

*** 10. Use saved host configuration? [Y/N]:**

This option allows you to use previously defined (saved) answers to Host Configuration Section questions. When you are running SYSGEN on line and have all the listings you need, you may want to change the Host Configuration Section answers in your saved answer file to redefine the way SYSGEN handles listings.

If you respond YES, your answer implies that you are performing a SYSGEN on the same, or similar, configuration you used to create the saved answer file.

This question appears only if you responded Yes to Question 6 (Use saved answers).

*** 11. Use saved peripheral configuration? [Y/N]:**

This option allows you to modify the previously defined (saved) peripheral configuration contained in the saved answer file. If you respond Yes to this question, SYSGEN uses the saved peripheral configuration.

If you respond No, SYSGEN asks Question 15 of the Target Configuration Section.

Note that if you answer No, it does not affect the input saved answer file and does not permit you to change vectors or CSRs of previously defined devices. Answering No permits you to change only the number of controllers; respond No to add or delete controllers.

This question appears only if you responded Yes to Question 6 (Use saved answers).

SETUP (Cont.)

*** 12. Skip End-of-Section (EOS) breakpoints? [Y/N]:**

This option allows you to choose whether or not to stop at End-of-Section (EOS) breakpoints. At these breakpoints, you can select whether to continue SYSGEN questions, repeat questions in the preceding sections (to correct answers), exit from SYSGEN, or cause SYSGEN to pause.

Breakpoints occur at the following points in SYSGEN Phase I:

- After the Target and Host Configuration Sections
- After the Executive Options Section
- After the Terminal Drivers Options Section
- After the Peripherals Options Section
- After the System Options Section

If the answers in the saved answer file correctly define the system you want to generate, you can direct SYSGEN to complete execution without interruption by answering Yes to this question.

This question appears only if you responded Yes to Question 6 (Use saved answers).

*** 13. Skip End-of-Execution (EOX) breakpoints? [Y/N]:**

End-of-Execution (EOX) breakpoints occur after the MACRO-11 assembler completes execution. If you know that the MACRO-11 processing will complete successfully, respond Yes to direct SYSGEN to proceed without pausing.

If you respond No, SYSGEN pauses after execution of these tasks to allow you to check the results and make any necessary corrections.

This question appears only if you responded No to Question 3 (inhibit MCR command lines) and Yes to Question 6 (Use saved answers).

*** 14. Clean up files from previous GENs? [Y/N]:**

When you are generating multiple systems on the same media, SYSGEN creates files that may not be appropriate from one system to the next. This question allows you to direct SYSGEN to delete all such unnecessary files.

This question appears only if you respond No to Question 3 (Inhibit MCR commands).

SETUP (Cont.)

*** 15. Chain to Phase II after Phase I completes? [Y/N]:**

If you respond Yes to this question, SYSGEN automatically invokes Phase II at the completion of Phase I. This question does not appear if you are generating an RSX-11S system or if SYSGEN2.CMD is not in UIC [200,200] on the SY: disk.

Chaining is most useful when you are using a complete saved answer file for input to both Phase I and Phase II. In this case, you can complete most of a SYSGEN unattended.

*** 16. Enter device for EXCPRV disk when it is ready (ddu:)[D: DL1:]**

Enter the device type and unit number (ddu:) for the unit containing the Executive source files.

SYSGEN appends the trailing colon if you omit it in your response.

This question only appears if you are using the RL01/02 distribution kit.

TARGET CONFIGURATION

4.3 TARGET CONFIGURATION SECTION

This section of questions defines the target processor type and options, and peripheral devices included in the target system. If you are running SYSGEN on a V4.1 system and if you choose the Autoconfigure option (Question 1 in the Setup Section), questions in this section requiring a logical (Yes or No) response may display an explicit default response. The explicit default response (indicated by the key D:) may be Yes or No.

*** 1. Processor Type [D: 11/34]:**

Enter the target PDP-11 processor type.

Valid entries are:

LSI-11*	11/20*	11/44
11/03*	11/23	11/45
11/04*	11/24	11/50
11/05*	11/34	11/55
11/10*	11/35	11/60
11/15*	11/40	11/70

Those processors that are marked with an asterisk (*) do not support memory management hardware. Therefore, they support unmapped systems only.

If you specified earlier that you are generating a mapped system, your response to this question must be one of those processors listed that is not marked with an asterisk. Otherwise, SYSGEN ignores your response and repeats the question.

NOTE

If your processor is either a PDP-11/23-PLUS or a MICRO/PDP-11, enter 11/23 as your processor. Then in Question 3, enter 128(10) or more as the memory size. Doing so tells SYSGEN that your processor is an PDP-11/23-PLUS.

SYSGEN always asks this question.

*** 2. Does processor have a switch register? [Y/N D:N]:**

The switch register is a reserved memory address to which you can write data. Under program control, you can read the contents of the switch register via the GSSW$ (Get Sense Switch) Executive directive. Not all processors have a switch register. If the processor for your target system does not have a switch register, you cannot use the GSSW$ directive.

TARGET CONFIGURATION (Cont.)

Processors that do have switch registers vary in the way that you can access them:

- There may be toggles on the front panel which you use to key in data to the switch register.
- Some newer processors have a keypad on the front panel, instead of toggles.
- On other processors, the console terminal replaces the toggles or keypad as the means of accessing the switch register.

This question appears only if the PDP-11 processor you specified (in Target Question 1) is an 11/03, 11/04, 11/23, or 11/34. Other processors always include a switch register.

*** 3. Memory size (in K-word blocks) [D R:16.-124. D:64.]**

Enter the amount of memory for your target system processor in 1024-word blocks (1K). Memory sizes apply to addressable memory only (not including the I/O page). The legal range is from 16K through 1920K; but that range depends on the minimum and maximum memory sizes for your particular processor. SYSGEN calculates the range values (min and max) based on your response to Question 1 in this section.

NOTE

Various system components (especially the Executive) use the memory size to determine whether your processor has 16-, 18-, or 22-bit addressing mode.

If you selected the Standard Function System (Setup Question 8), you must specify a minimum of 64K words of memory; otherwise, SYSGEN issues an error message and exits.

Table 4-1 shows the minimum and maximum memory sizes for RSX-11M-supported PDP-11 processors.

Memory size must be specified in 4K increments (except for the 30K unmapped system).

TARGET CONFIGURATION (Cont.)

Table 4-1
PDP-11 Processor Memory Sizes for RSX-11M/RSX-11S

	Memory Size (in K-word blocks)			
	RSX-11M		RSX-11S	
PDP-11 Processor	Minimum	Maximum	Minimum	Maximum
LSI-11, 11/03	Not supported	Not supported	8	30
11/04, 11/05	16	28	16	28
11/10, 11/15	16	28	16	28
11/20	16	28	16	28
11/23, 11/24	16	1920	8	1920
11/40 (no KT-11)	16	28	16	28
11/44	64	1920	64	1920
11/70	32	1920	32	1920
All others[1]	16	124	8	124

1. In the category "all others," the processors are the PDP-11/34, 11/35, 11/40, 11/45, 11/50, 11/55, and 11/60.

NOTE

Specifying 128K (or more) of memory indicates that you have a system with 22-bit addressing. If your target PDP-11 processor is a MICRO/PDP-11, 11/23, 11/23-PLUS, 11/24, 11/44, or 11/70 and if you want to generate a system that is transportable to an 18-bit processor, you should specify 124K or less.

*** 4. Include support for K-series devices? [Y/N D:N]:**

The K-series laboratory options are a set of real-time data acquisition modules that interface to the PDP-11 family of computers.

Respond Yes if you want support for the K-series software routines (see the RSX-11M/M-PLUS I/O Drivers Reference Manual). If you enter Yes, SYSGEN automatically includes support for Connect to Interrupt and AST (Asynchronous System Traps).

TARGET CONFIGURATION (Cont.)

*** 5. Extended arithmetic element (KE11-A/B EAE) present? [Y/N D:N]:**

The extended arithmetic element (EAE) is a hardware feature that performs signed integer multiplication, division, multiple-position shifts, and normalization. The EAE performs these functions significantly faster than software subroutines.

This question appears only for PDP-11/20 and unmapped (no KT-11 hardware) PDP-11/40 systems.

*** 6. Floating point processor (FP11) present? [Y/N D:N]:**

The PDP-11 floating point processors perform floating point arithmetic operations and convert data from integer to floating point format and vice versa.

PDP-11 Processor	Floating Point Processor
11/23, 11/24	KEF11-AA, FPF-11
11/34	FPF11-A
11/44	FPF11-F
11/45, 11/50, 11/55, 11/70	FPF11-C
11/60	FPF11-E

The PDP-11/23 and PDP-11/24 have both a microcode floating point option (KEF11-AA) and a hardware option (FPF-11); both options are fully compatible with the 11/34 floating point instruction set. If the target processor is a PDP-11/60, floating point support is automatically included and the question does not appear.

This question does not appear for other processors.

This feature should not be confused with the Floating Instruction Set (FIS) described in Question 7 of this section.

If you respond Yes to this question, SYSGEN automatically includes Executive support for Asynchronous System Traps (ASTs). See Question 17 in the Executive Options Section.

If you respond No to this question, SYSGEN asks Question 7.

*** 7. Floating instruction set (FIS) present? [Y/N D:N]:**

The Floating Instruction Set (FIS) feature includes hardware functions that perform floating point add, subtract, multiply, and divide instructions.

This question appears only if your target system does not have the floating point processor (Question 6) and if the target processor is one of the following: LSI-11, PDP-11/03, 11/23, 11/24, 11/35, or 11/40.

TARGET CONFIGURATION (Cont.)

*** 8. Extanded instruction set (EIS) present? [Y/N D:N]:**

This question only appears if EIS is standard or optional for your particular target processor. Those processors supporting the EIS feature are:

PDP-11 Processor	EIS Feature	PDP-11 Processor	EIS Feature
LSI-11	Optional	11/44	Standard
11/03	Optional	11/45	Standard
11/23	Standard	11/50	Standard
11/24	Standard	11/55	Standard
11/34	Standard	11/60	Standard
11/35	Optional	11/70	Standard
11/40	Optional		

If you choose this option, some of the following EIS instructions are used by the Executive and the I/O drivers, thereby speeding up the execution time of the operating system and reducing Executive and I/O driver address space. The extended instruction set, which can be used by the Executive and I/O drivers, consists of the following instructions:

MUL	Multiply
DIV	Divide
ASH	Shift arithmetically
ASHC	Arithmetic shift combined
XOR	Exclusive OR
SOB	Subtract 1 and branch if not equal to 0
RTT	Return from interrupt
MFPI	Move from previous instruction space
MTPI	Move to previous instruction space

Note that if you are generating a system that you wish to run on different processors, you should be aware that a software system that supports EIS instructions does not run on processors that do not have EIS hardware. Although your target processor may have EIS hardware as a standard feature, this question allows you to exclude EIS support so that your system is transportable to non-EIS hardware.

*** 9. If using KW11-P as system clock: number of ints/sec.[D R:0-1000 D:0]**

RSX-11M and RSX-11S require a real-time clock for operations. Three clocks are available:

- The KW11-P programmable frequency clock
- The KW11-L line frequency clock
- The DL11-W line frequency clock/console

If your system has a KW11-P and you want to use this clock as your system clock, the acceptable range is from 0 through 1000(10).

TARGET CONFIGURATION (Cont.)

A response of 0 indicates that there is no programmable clock in this configuration or that you want to use the line frequency clock as the system clock.

This question does not appear for the LSI-11, PDP-11/03, or PDP-11/23 processors.

NOTE

The number of interrupts you select must be evenly divisible into 10000(10)

More than 100(10) clock interrupts-per-second greatly increases system overhead; carefully consider the impact on your system before specifying a number greater than 100(10) interrupts-per-second. If you do specify more than 100(10) interrupts-per-second and the clock is your system clock, you may have to adjust the algorithms for the other clock functions (for example, round-robin scheduling and disk swapping). Adjusting the algorithms compensates for the system overhead caused by the high number of interrupts-per-second. If you need the clock for time-critical tasks, it is recommended that the clock not be your system clock also.

*** 10. Line frequency: A- 60Hz B- 50Hz [D: A] [S]:**

Specify a line frequency of either 50 or 60 Hz. In the U.S.A., line frequency is always 60 Hz. The default response is 60 Hz.

If a KW11-P programmable frequency clock is available and if you have selected the Autoconfigure option (Setup Question 1), Autoconfigure computes the line frequency.

*** 11. KW11-Y Watchdog timer support? [Y/N D:N]:**

The KW11-Y watchdog timer is a hardware clock that constantly attempts to time out system activity. The Executive refreshes the timer at every clock interrupt. If the system faults or if a hardware failure occurs and the timer expires, a message indicates that the system has been corrupted.

This question always appears.

*** 12. Memory parity support? [Y/N D:N]:**

Respond Yes if your system includes parity memory and if you want Executive support to detect parity errors.

If you intend to log cache and memory parity errors, you must answer Yes to this question. (See Question 24 of the Executive Options Section.)

TARGET CONFIGURATION (Cont.)

Memory parity support uses approximately 200 words of memory.

If you respond Yes to this question, SYSGEN asks Question 13.

*** 13. Cache memory? [Y/N D:N]:**

Cache memory is standard on PDP-11/44, 11/60, and 11/70 processors. Cache memory is optional on the PDP-11/34.

Respond Yes if you want Executive support to detect parity errors.

This question appears only for the previously specified processors when you select memory parity support (Question 12) for those processors.

*** 14. Highest interrupt vector [O R:0-774 D:0]:**

The response to this question specifies the highest interrupt vector address. If you respond 0 (or press RETURN) or with an even value less than 400(8), SYSGEN calculates this address based on your answers to the peripheral questions that occur later in Phase I. The end of the vector area is minimally set to 400(8) bytes. If it is necessary for you to specify the end of the vector area yourself, remember that some devices (noteably DLs and DZs) have two vectors: one for input and one for output. Check the PDP-11 Peripherals Handbook or the Terminals and Communications Handbook if you are uncertain.

If you intend to include any devices in your target system that have an interrupt vector greater than 400(8) (such as K-series and certain communications devices), specify an even value for the highest interrupt vector that you need to accommodate those devices at this time.

NOTE

SYSGEN does not write this value to the saved answer file until you complete the Peripheral Options Section.

This question always appears.

*** 15. Devices**

This question asks you to enter, in mnemonic form, the peripherals and pseudo devices for your target configuration. SYSGEN generates questions only for those devices you specify in response to this question.

TARGET CONFIGURATION (Cont.)

NOTE

If you chose the Autoconfigure option, you can add new devices, you can add devices not found by Autoconfigure, and you can exclude any devices already found by Autoconfigure.

Enter devices in the form:

device=number of controllers

where device is the device mnemonic and controllers is the number of controllers for the device type. If you omit the controller entry (=controllers), SYSGEN assumes one controller for that device type.

Generally, there may be one controller for several devices of a given type. For example, four RA80 drives can be connected to one UDA50 controller. In this case, all you are required to enter in response to this question is DU; SYSGEN defaults to one controller for all four RA80 drives.

To help select the appropriate device mnemonic, enter an asterisk (*) to generate a list of devices.

You can display your current configuration (the device mnemonics and number of controllers) by entering a question mark(?).

If you chose the Autoconfigure option, SYSGEN prints the list of devices that Autoconfigure found before this question is asked. If you are satisfied with Autoconfigure's results, enter a period (.) in response to this question.

If you are not satisfied with Autoconfigure's results, you can add new devices, modify existing devices, and delete any devices that Autoconfigure found. Those devices you specify are the only devices affected in the Target Configuration saved answer file. Autoconfigure's results remain the same for the rest of the hardware configuration.

When you have entered all of the devices and controllers for your target system, and have made any necessary corrections, terminate your response by entering a period (.) either following the last controller or on a line by itself.

If you make a mistake and specify a device type that is not included in the target configuration, enter device=0 (see the following example). Also, if you specify the wrong number of controllers, you can correct this by reentering the device type and the new number of controllers. SYSGEN uses the most recent response for duplicate entries. For example, if your system includes two RK11 controllers and one TC11 DECtape controller, the following sequence corrects an errant response of three RK11s, two TU56s and one RL11:

```
Devices:  DK=3
Devices:  DT=2
Devices:  DL    (defaults to 1)
Devices:  DK=2  (supersedes previous value of 3)
Devices:  DT    (supersedes previous value of 2)
Devices:  DL=0  (removes previously specified RL11)
Devices:  .     (terminates input)
```

TARGET CONFIGURATION (Cont.)

Table 4-2 lists the peripheral devices supported by RSX-11M:

Table 4-2
Peripheral Devices Supported by RSX-11M

Mnemonic	Device	Hardware Controller
AD	Analog-to-Digital Converter	AD01-D
AF	Analog-to-Digital Converter	AFC11
AR	Laboratory Peripheral Subsystem	AR11
CR	Card Reader	CR11/CM11
CT	TU60 Cassette	TA11
DB	RP04/05/06 disk packs	RH11/RH70
DD	TU58 DECtape II	DL11
DF	RF11 disks	RF11
DK	RK05/J/F cartridge disk	RK11
DL	RL01 disk drive	RL11/RLV11
	RL02 disk drive	RL21/RLV21/RLV12
DM	RK06/07 cartridge disk	RK611/RK711
DP	RP02/03 disks	RP11/RP11C
DR	RM02/03/05 disks and	RH11/RH70
	RM80/RP07 fixed media	RH70
DS	RS03/04 fixed-head disks	RH11/RH70
DT	TU56 DECtape	TC11
DU	RA60 removable media	UDA50
	RA80/81 fixed media	UDA50
	RC25 fixed/removable media	RC25
	RD51 fixed disk	RQDX1
	RX50 floppy disk	RQDX1
DX	RX01 floppy disk	RX11
DY	RX02 floppy disk	RX211/RXV21
EM	ML11 Nonrotating Electronic Memory	RH70
GR	Graphics Display Processor and Scope	VT11/VS60
IC	Industrial Control System	ICR/ICS11
IP	Industrial Control System	IP11/IP300
IS	Industrial Control Subsystem	DRS/DS11
LA	Laboratory Peripheral Accelerator	LPA11-K
LP	Line Printer	LA11/LP11/LS11/LV11 LN01/LA180
LS	Laboratory Peripheral Subsystem	LPS11
MF	TU78 magtape	RH70/TM78
MM	TU45/TU16/TE16/TU77 magtapes	RH11/RH70/TM02/TM03
MS	TS11/TSV05/TU80 magtapes	TS11
MT	TS03/TU10/TE10 magtapes	TM11/TMA11/TMB11
PP	Paper Tape Punch	PC11
PR	Paper Tape Reader	PC11/PR11
UD	Universal Digital Controller	UDC11
XB	Interprocessor Link	DA11-B
XL	Interprocessor Link	DL11-E
XM	Interprocessor Link	DMC11
XP	Synchronous Interface	DP11

(continued on next page)

TARGET CONFIGURATION (Cont.)

Table 4-2 (Cont.)
Peripheral Devices Supported by RSX-11M

Mnemonic	Device	Hardware Controller
XQ	Synchronous Interface	DQ11
XU	Synchronous Interface	DU11
XW	Synchronous Interface	DUP11
YH	Asynchronous Terminal Interface	DH11/DHV11
YL	Asynchronous Terminal Interface	DL11/A/B/C/D/E/J/W
YJ	Asynchronous Terminal Interface	DJ11
YZ	Asynchronous Terminal Interface	DZ11/DZV11
Pseudo devices:		
CO:	-	Console terminal
NL:	-	Null device

NOTE

If you intend to perform future system generations using your target system, you must include the NL pseudo device.

If you are generating RSX-11M, SYSGEN forces YL into the system. Normally, you must specify any pseudo devices if you wish to include them. In addition, SYSGEN forces the null device (NL:) into a system only if (1) that system does not include an asynchronous terminal interface and (2) if that system includes at least one of the following disks: DB:, DF:, DK:, DL:, DM:, DP:, DR:, DS:, DX:, DY:, DU:, or EM:. Otherwise you must explicitly select NL: (necessary if the new system will be the host system for a later SYSGEN).

If you specify CO, you get the Console Logger task and the CO driver. If you do not specify CO, SYSGEN automatically includes the pseudo device CO without the Console logger task and the CO driver. See the RSX-11M/M-PLUS System Management Guide for details on the differences between the CO driver and the CO pseudodevice.

CO is not available on unmapped systems or on RSX-11S systems.

GR is not valid on systems with more than 124K of memory.

NOTE

To specify the number of paper tape device controllers, you must consider the PC11 reader/punch as two separate devices, a reader (PR) and a punch (PP). Enter both a PR and a PP for each PC11, but only a PR for each PR11.

HOST CONFIGURATION

4.4 HOST CONFIGURATION SECTION

Your responses to these questions define the configuration on which you are running SYSGEN.

*** 1. Is a line printer available? [Y/N]:**

This option allows you to specify the device to which maps and listings will be directed.

If you respond Yes, you may direct SYSGEN to spool listings and maps to the line printer.

If you respond NO, SYSGEN directs listings and maps to your terminal.

*** 2. Spool assembly listings and Executive and driver maps? [Y/N]:**

This option allows you to specify whether or not to spool listings. For example, you can direct listings to an intermediate device. Spooling the listings to an intermediate device allows you to save the listings without the risk of filling up the distribution disk.

If you want the listings spooled to the line printer, respond Yes to this question.

If you respond Yes, Question 1 (List Executive map?) of the Executive Task Build Section is not asked.

If you want to save the listings but not spool them, respond No to this question (see Question 5).

This question appears only if you responded Yes to Question 1, and if you are generating your system from an on-line host computer.

*** 3. Does the listing/map device have at least 120 columns? [Y/N]:**

If the listing device does not have at least 120 columns, SYSGEN creates a narrow listing for assembly and map listings. For information on narrow listings, refer to the descriptions of the /LI switch for MACRO-11 and the /WI switch in the RSX-11M/M-PLUS Task Builder Manual.

*** 4. Assembly listing file device (ddu:) [D: NL:]:**

This option allows you to choose whether or not to direct listings to an RSX-11M logical or pseudo device or to not generate them at all.

Specify LP: to direct the listings to the line printer if you are running stand-alone, to a disk device (ddu:) if you are running on-line, and NL: (the null device, and the default) to direct SYSGEN not to produce assembly listings.

HOST CONFIGURATION (Cont.)

NOTE

The only driver that SYSGEN loads is the LP: driver.

If you are generating your system with either an RK06/07 or RL01/02 distribution kit, do not direct your assembly listings to any of the distribution kit disks; there is not sufficient space on those kits.

*** 5. Map device for Executive and device drivers (ddu:) [D: <default>]:**

The response to this question defines the default device to which you want to direct the Executive and device driver maps. You should specify a device other than the system disk for these maps.

For unmapped systems, you should specify a device, since the maps are necessary to determine the size of the Executive and device drivers and to lay out memory partitions in SYSGEN Phase II.

If you are using an RL01/02 distribution kit, the default response to this question is the same as your response to Question 17 in the Setup section.

If you are using either an RK06/07 or a "big disk" distribution kit, the default response is SY:.

Unless you are performing a PREPGEN, you must mount (using the MCR MOUNT command) the disk to which you are directing map listings before you invoke Phase II. That disk must contain the UFD [1,34] for a mapped system, or [1,30] for an unmapped system. If you direct SYSGEN to chain directly to Phase II, you must mount the map listing disk before you invoke Phase I.

EXECUTIVE OPTIONS

4.5 EXECUTIVE OPTIONS SECTION

Your responses to these questions define the RSX-11M Executive options you want included in your target system.

The RSX-11M/M-PLUS Executive Reference Manual describes some of these directives and Executive options.

Answer Yes to the features you want included in your system.

*** 1. Include support for DBMS-11? [Y/N]:**

For details on DBMS-11, refer to the DBMS-11 documentation.

This question appears only if the target processor memory is greater than 96K, the system is mapped, and you are generating RSX-11M.

If you select DBMS-11 support, SYSGEN automatically includes Executive support for:

- Files-11 ACP
- RMS bucket locking and placement control
- Memory management (PLAS) directives
- Send/Receive By Reference directives
- Asynchronous System Traps (AST)
- System Controlled partition support
- The following System directives:
  - Get Partition Parameters (A)
  - Get Task Parameters (B)
  - Send/Receieve (C)
  - Extend Task (E)
  - Stop Bit (I)
  - Parent/Offspring Tasking (K)

See Questions 2, 3, 7, 8, 17, 33, and 37 respectively.

*** 2. FILES-11 ACP? [Y/N]:**

You must select Files-11 ACP (FCP) if you wish to include the services described in the IAS/RSX-11 I/O Operations Reference Manual or if you intend to include RMS-11 or any file functions of a high-level language. DIGITAL-supplied software uses the FCP; you should select this option.

EXECUTIVE OPTIONS (Cont.)

If you selected DEMS-11 support, SYSGEN automatically includes this option.

If you are generating an RSX-11S system, this question does not appear and an FCP is not included in your system.

If you choose this option, Question 4 of the System Options Section asks you to specify a version of the FCP.

*** 3. RMS bucket locking (file sharing) and placement control? [Y/N]:**

Record Management Services (RMS-11) is an extended file access feature supplied with RSX-11M. RMS-11 bucket locking, which is necessary for file sharing, and placement control are features of RMS-11 that are described in the RMS-11 User's Guide.

If Files-11 ACP (FCP) is included in your system either by default or by selecting Question 2, SYSGEN asks this question to provide the necessary Executive and FCP support.

If you do not choose this support, RMS-11 file sharing and/or placement control is not included in your system.

This option adds approximately 200(10) words to the size of the Executive.

This option is not available for RSX-11S systems.

*** 4. Non-resident tasks (task loader) [Y/N]:**

It is highly recommended that you select this option. Nonresident task support allows tasks that are not permanently resident in your system to be loaded from disk.

If you do not include support for the task loader, all tasks must be installed and fixed into the system image by VMR.

If you answer No, Question 5 (loadable task loader) does not appear.

This question does not appear if you are generating an RSX-11S system.

*** 5. Loadable task loader? [Y/N]:**

The RSX-11M task loader reads tasks scheduled for execution from disk. The loadable task loader is an RSX-11M Executive feature that reduces the amount of address space required for the Executive (excluding pool). This feature frees space for additional Executive dynamic storage.

EXECUTIVE OPTIONS (Cont.)

If you answer No to this question, SYSGEN task builds the loader into the Executive which requires up to 2400 bytes of Executive virtual address space. The system used the corresponding amount of main memory to hold the loader as a fixed privileged task. By choosing the loadable task loader option, those 2400 bytes become available for use as dynamic storage (pool space) or for other Executive features.

This option does not appear for RSX-11S systems, unmapped systems, or systems that do not support nonresident tasks.

*** 6. Executive Common? [Y/N]:**

If you choose this option, much of the Executive's directive support code will be set in external memory-resident commons rather than being resident in the Executive itself. These memory-resident commons free more of the Executive's address space, which can then be used for additional pool space.

The Executive commons are two 4K-word partitions. However, the potential space available for the Executive commons is not totally utilized. VMR calculates the actual size of the Executive commons (based on which Executive options you select in this section) and allocates the necessary amount of memory for the Executive commons during Phase II. Generally, VMR allocates about 5.5K words as the combined size of both Executive commons.

The cost of choosing the Executive commons is that the Executive commons occupy the equivalent amount of memory that they would otherwise occupy in the Executive. The file SYSVMR.CMD includes a SET /POOL command that always creates the maximum possible pool space for a mapped target system.

SYSVMR.CMD may create more pool space than your system requires, particularly if you choose the Executive Common support. This extra pool space directly impacts the amount of memory available for your applications. However, you can remedy this during Phase II by editing SYSVMR.CMD and modifying the SET /POOL command. Should the modified pool size subsequently prove to be inadequate for your system's needs, you can remodify the SET /POOL command to allocate more pool up to the limits of the Executive's permanently mapped virtual address space (normally 20K). Remember, any time you modify the contents of SYSVMR.CMD, you must recreate the system image, then reinvoke SYSVMR.CMD. (See Example 5-1 at the end of Chapter 5 for details on creating the system image file.)

This question appears only for mapped systems with at least 36K words of memory.

*** 7. Memory management (PLAS) directives? [Y/N]:**

Memory management (PLAS) directives provide functions that allow tasks to dynamically modify mapping of their physical addresses in memory. These directives also allow tasks to dynamically create and delete common blocks.

EXECUTIVE OPTIONS (Cont.)

The following lists the memory management directives:

Attach Region	Get Mapping Context
Create Address Window	Map Address Window
Create Region	Receive By Reference
Detach Region	Send By Reference
Eliminate Address Window	Unmap Address Window

Memory management directives are restricted to use on mapped systems. Therefore, the question does not appear for unmapped systems.

If you selected DBMS-11 (Question 1) SYSGEN includes memory management directives by default and does not ask this question.

If you do not select memory management (PLAS) directives, you cannot include Executive support for Send/Receive By Reference directives (Question 8) or the Get Mapping Context directive (Question 9).

The memory management (PLAS) directives add approximately 1000(10) words to the Executive.

*** 8. Send/Receive By Reference directives? [Y/N]:**

The Send/Receive By Reference directives allow one task to send to another task a reference to an area within a region. The receiver task is given a specified access that allows it to map to or delete the region.

If you selected DBMS-11 and memory management PLAS directive support, SYSGEN automatically includes Executive support for the Send/Receive By Reference directives; this question does not appear.

If you did not include support for the Memory Management (PLAS) directives, this question does not appear.

*** 9. Get Mapping Context directive? [Y/N]:**

The Get Mapping Context directive returns parameters to the issuing task that describe the current window-to-region mapping assignments. These parameters allow you to restore the mapping context by using the memory management Create Address Window directive.

This question appears only if you selected support for Memory Management (PLAS) directives (Question 7).

*** 10. Address checking? [Y/N]:**

Address checking directs the Executive to perform boundary checks and alignment checks on addresses issued by users in Executive directives.

If you are generating a mapped system, SYSGEN automatically includes address checking and does not ask this question.

EXECUTIVE OPTIONS (Cont.)

Address checking is recommended unless you are running a fully debugged application system.

*** 11. I/O rundown? [Y/N]:**

I/O rundown ensures RSX-11M system integrity by completing all outstanding task-related I/O before allowing a task to exit.

If you are generating a mapped system, SYSGEN automatically includes support for I/O rundown and does not ask the question. I/O rundown is recommended unless you are running a fully debugged application system.

*** 12. Multiuser protection? [Y/N]:**

This feature prevents tasks initiated at one terminal from interfering with tasks initiated at other terminals. Multiuser protection provides for public and private devices and login and logout with password protection.

When you select this feature SYSGEN includes support for checkpointing with the system checkpoint file. In addition, SYSGEN automatically includes the following terminal driver features:

- Read with special terminator
- Breakthrough write
- Read with no echo
- CTRL/R support

Multiuser protection increases the size of the Executive by approximately 100(10) words.

Select multiuser protection support only if your system has 32K or more of main memory. If your target system is unmapped, it is recommended that you not select this option.

Multiuser protection support is not available on an RSX-11S system; the question does not appear.

*** 13. ANSI Magtape ACP? [Y/N]:**

This feature provides support for volume and file labels that conform to the ANSI standard (X3.27-1978) for industry-compatible tapes. This feature requires Executive AST support; if you select ANSI magtape ACP support, SYSGEN automatically includes AST support.

ANSI magtape ACP support increases the size of the Executive by approximately 40(10) words. If you select this option, SYSGEN task-builds F11MSG (the magtape error processor), MTAACP (the magtape Ancillary Control Processor), and MAG (the magtape ACP control task).

EXECUTIVE OPTIONS (Cont.)

In addition, if you select ANSI magtape support, SYSGEN generates a second library called ANSLIB.OLB. This library (ANSLIB.OLB) contains an FCS that communicates with the ANSI magtape ACP. This FCS also supports the FCS big buffer feature. See the I/O Operations Manual for more information.

If you respond Yes, support for the Send/Receive directive is included.

If you do not select ANSI magtape support, the system library, SYSLIB.OLB, contains an FCS that does not communicate with the ANSI magtape ACP.

RSX-11S systems do not support ANSI magtapes; the question does not appear.

*** 14. Do you want on-line formatting (FMT) or diagnostic QIOs? [Y/N]:**

Diagnostic QIOs enable the Executive and device drivers to perform special I/O functions and return additional device status information required by on-line diagnostic tasks. FMT is one utility that uses those special I/O functions.

If you intend to either do on-line disk formatting or write your own hardware diagnostic routines, you should answer Yes to this question. See the RSX-11M/M-PLUS Utilities Manual for information on the on-line formatter (FMT) and the RSX-11M/M-PLUS I/O Drivers Reference Manual for a description of QIOs.

This feature is not available for RSX-11S systems. The question does not appear.

*** 15. Loadable device drivers? [Y/N]:**

This option allows you to load and unload most device drivers dynamically using MCR and VMR LOAD and UNLOAD commands. All drivers except the industrial and process control device drivers (UDC, ICS/ICR, and DRS/DSS) and the VT11/VS60 graphics driver are loadable.

Note that the full-duplex terminal driver requires loadable device driver support. Therefore, if you wish to include the full-duplex terminal driver, you must include loadable driver support.

When you select this option, SYSGEN generates loadable device drivers; however, SYSGEN makes all data bases resident.

If you respond No, SYSGEN links all device drivers generated for your system into the Executive, making them all resident. This impacts the potential amount of pool space available to your system.

SYSGEN always asks this question.

EXECUTIVE OPTIONS (Cont.)

*** 16. Should the default for all applicable drivers be loadable? [Y/N]:**

If you included loadable device driver support, responding Yes to this question specifies that all drivers (except UDC, ICS/ICR, DRS/DSS, and VT11/VS60) are to be built as loadable by default (you can override the default in the Peripheral Options Section).

The response to this question sets the default, either L (loadable) or R (resident) for the first parameter in some responses to peripherals questions. You can override this default in your responses to the questions in the Peripheral Options Section.

If you respond No to this question, SYSGEN builds all drivers (except the full-duplex terminal driver, if selected) as resident.

If you do not choose loadable device driver support in Question 15, all drivers will be resident, and you cannot override that condition in the Peripheral Options Section.

*** 17. Include Support for Asynchronous System Traps (AST)? [Y/N]:**

This option allows the processing of Asynchronous System Traps.

Support for ASTs is automatically included if you previously selected any of the following:

- The ANSI magtape ACP support
- The Floating point processor (FP11)
- DBMS-11
- The LA driver (LPA11-K)
- The K-series device support routines

Respond Yes if you want AST support.

If you respond No, the terminal driver cannot support unsolicited input character ASTs. (See Question 6 in the Terminal Driver Options Section.)

*** 18. Include support for Cancel Selective Marktime? [Y/N]:**

If you select this option, you can selectively cancel specific marktime requests. See the CMKT$ directive in the RSX-11M Executive Reference Manual for information on the Cancel Marktime directive.

If you do not select support for Cancel Selective Marktime, any attempt by a task to cancel a marktime results in the cancellation of all outstanding marktimes for that task.

If you selected support for DBMS-11, SYSGEN automatically includes support for Cancel Selective Marktime.

EXECUTIVE OPTIONS (Cont.)

*** 19. Task termination and device not ready messages (TKTN)? [Y/N]:**

This option directs the system to generate on the input device and on the console DEVICE NOT READY and task termination messages when these conditions occur.

You must select this option if you want Post Mortem Dump (PMD) and Snapshot Dump (SNAP$) support or Logging of Task Abort support.

*** 20. Power fail recovery? [Y/N]:**

This option provides for automatic system recovery in the event of power failure. Device drivers and tasks that specify a power recovery AST are notified when power returns.

There are three possible recovery procedures:

- If a device was busy prior to the powerfail and the requested I/O had not completed, the routine times out and checks the device status until the device is "ready" for I/O operations to resume.
- If a device was not busy prior to the powerfail and receives an I/O request after the powerfail, the routine times out and checks the device status until the device is "ready" for I/O operations to resume.
- If a device was not busy prior to the powerfail and there are no pending I/O requests, operations resume with no special handling by the recovery routine.

Note in the first two cases, if the maximum timeout count is reached before the disk spins back up and is "ready," an unsuccessful I/O completion code is returned.

This option is required to support the Specify Power Recovery AST directive.

*** 21. Install, request, and remove on exit? [Y/N]:**

This option (the MCR RUN command) reduces the number of installed tasks in memory, thereby optimizing the use of system memory resources and minimizing use of pool. See the RSX-11M/M-PLUS MCR Operations Manual for information on the RUN command.

This feature is not available for RSX-11S systems. The question does not appear.

EXECUTIVE OPTIONS (Cont.)

*** 22. Large (20K) Executive? [Y/N]:**

This option allows you to generate a 20K Executive to increase the size of the Executive's virtual address space, typically, to provide more pool. This reduces to 8K the maximum size of privileged tasks that map the I/O page.

If you are generating an unmapped system, this question does not appear.

*** 23. Logical device assignment? [Y/N]:**

This option is highly recommended. If you intend to use your target system for subsequent SYSGENs, you must answer Yes to this question.

This option (the MCR ASN command) allows you to assign a logical name to a physical, pseudo, or other logical device. Assignments may be made on a per terminal (local) or system-wide basis (global). See the RSX-11M/M-PLUS MCR Operations Manual for details on the ASN command.

*** 24. Include support for error logging? [Y/N]:**

If you choose this option, the Executive logs information on disk and tape device errors and time-outs, logs information on traps to undefined interrupt vectors, and logs cache and memory parity error traps. The Error Log task stores the recorded information in a disk file for later analysis. See the RSX-11M/M-PLUS Error Logging Manual for detailed information.

Error logging is most useful for detecting intermittent faults on large systems. Error logging support adds approximately 700(10) words of code to the Executive.

SYSGEN supports error logging only for the following devices:

CT:	DK:	DR:	DX:	MM:
DB:	DL:	DS:	DY:	MS:
DD:	DM:	DT:	EM:	MT:
DF:	DP:	DU:	MF:	

When you select this option, SYSGEN includes support for checkpointing, the Send/Receive directives, and for nonresident tasks.

If you did not select memory parity support (Question 12 of the Target Configuration Section), the Error Log task does not record cache or memory parity errors.

Error logging is not available for RSX-11S systems. The question does not appear.

EXECUTIVE OPTIONS (Cont.)

*** 25. Do you intend to include a user-written driver? [Y/N]:**

This question should be answered No if you do not intend to include a user-written driver in your target system. A user-written driver is a non-DIGITAL supplied and non-DIGITAL supported driver. See the RSX-11M Guide to Writing an I/O Driver for a complete discussion of SYSGEN support for user-written drivers.

You should answer Yes if you want the user-written driver to be memory resident.

If you respond Yes, SYSGEN asks Questions 26 and 27 concerning the Executive routines $GTWRD (GET WORD) and $PTWRD (PUT WORD).

*** 26. Include routine $GTWRD? [Y/N]:**

This option (the $GTWRD Executive routine) allows you to obtain a word from a user-defined buffer. See the RSX-11M Guide To Writing an I/O Driver for information on how to use this routine.

If you have included LA: (LPA11-K) as one of the specified devices, SYSGEN automatically includes support for the $GTWRD routine. Also, SYSGEN includes support for the Send/Receive directive.

This question does not appear if you responded No to Question 25 (you do not intend to include a user-written driver).

*** 27. Include routine $PTWRD? [Y/N]:**

This option (the $PTWRD Executive routine) allows you to send a word to a user-defined buffer. See the RSX-11M Guide To Writing an I/O Driver for information on how to use this routine.

If you have included the AD: (AD01-D) or AF: (ACF11) subsystem (see Appendix C) as one of the specified devices, SYSGEN automatically includes support for the $PTWRD routine.

This question does not appear if you responded No to Question 25 (you do not intend to include a user-written driver).

*** 28. Disk writecheck? [Y/N]:**

Writecheck support increases the data reliability of disks. The added activity of disk writecheck does, however, diminish the speed of disk throughput. If selected, writecheck may be enabled or disabled dynamically on a per-drive basis with the MCR SET command.

SYSGEN supports disk writecheck for the following devices:

DB	DF	DK	DL	DM
DP	DR	DS	DU	EM

EXECUTIVE OPTIONS (Cont.)

If your target system configuration does not include any of these devices, the question does not appear.

NOTE

If you include writecheck support and want to use it, you must issue the MCR SET /WCHK=ddnn: command after you complete SYSGEN. This command causes the driver to perform a writecheck function after each write. For more information on the MCR SET /WCHK command, see the RSX-11M/M-PLUS MCR Operations Manual.

Here is how the writecheck function works. After the data is written to disk, the disk controller reads a copy of that data from memory, word by word, while simultaneously reading a second copy of that data from the disk and does an exclusive OR (XOR instruction) to compare them. If the writecheck function fails (that is, if the copies compared are not the same), the driver retries the original write operation and performs another writecheck until the maximum retry count is reached (at which time the system issues the hard error message IE.WCK).

RSX-11S does not support disk writecheck; the question does not appear.

*** 29. Software write-lock support? [Y/N]:**

If you respond Yes to this question, SYSGEN includes Executive support for the MCR MOUNT /[NO]WRITE command. The MCR MOUNT /[NO]WRITE command allows you to gain control over write access to a specified mass storage device. See the RSX-11M/M-PLUS MCR Operations Manual for a complete description of the MCR MOUNT /[NO]WRITE command.

The MOUNT /[NO]WRITE command can be used for software write-locking the following mass storage devices:

Disks:

DB	DF	DK	DL	DM
DP	DR	DS	DU	EM

Magnetic Tape:

MF	MM	MS	MT

Dectape:

DD	DT

Cassette:

CT

EXECUTIVE OPTIONS (Cont.)

Support for software write-lock adds approximately 40(10) words to the size of the Executive.

This option is not available for RSX-11S systems.

*** 30. Executive Debugging Tool (XDT)? [Y/N]:**

The Executive Debugging Tool (XDT) provides a subset of ODT-11 commands to be used in the system state. See the RSX11-M Guide to Writing an I/O Driver for details on XDT.

If you respond Yes, SYSGEN includes XDT in the Executive to allow interactive debugging of Executive modules, privileged tasks, I/O drivers, and interrupt service routines.

This option includes consistency checking in the dynamic storage region (pool) routines. The routines are used to detect corruption of pool pointers. Also included is code to trap I/O process corruption from drivers.

XDT adds approximately 1K words to the size of the Executive.

*** 31. Rotating pattern in data lights? [Y/N]:**

This option causes the PDP-11 CPU lights to rotate in a circular pattern when the processor is idle.

This option is available only on the PDP-11/45, 11/50, 11/55, and 11/70 processors.

*** 32. Include support for communications products (such as DECnet)? [Y/N]:**

This option allows you to include DECnet or DPM/DPM-PLUS support. Refer to the DECnet or DPM/DPM-PLUS documentation for details.

If you respond Yes, SYSGEN includes the support necessary for the following products:

- DECnet-11M
- RSX DLX-11
- RSX-11 PSI/CAN (X.25 packet-switched interface)
- RSX-11 PSI/FR (X.25 packet-switched interface)
- RSX-11M SNA PROTOCOL EMULATOR
- RSX-11 3271 PROTOCOL EMULATOR

EXECUTIVE OPTIONS (Cont.)

When you respond Yes, SYSGEN also automatically includes:

- FCP support
- AST (Asynchronous System Traps) support
- Cancel Selective Marktime support
- Logical Device Assignment support
- Loadable Device Driver support
- Address Checking support
- Get Partition Parameters Directive support
- Get Task Parameters Directive support
- Send/Receive Directive support
- Extend Task Directive support
- Asynchronous Buffered I/O support

When you respond Yes, the following message appears on your terminal:

```
If you will be generating DECnet into this system, be
sure you have read the section on SYSGEN requirements
in the RSX DECnet Network Generation and Installation
Guide.
Several DECnet features (eg. remote terminal support,
11S task loading/upline dumping etc.) require special
consideration during SYSGEN.
```

*** 33. System-controlled partitions? [Y/N]:**

This option allows the Executive to allocate available space in memory to accommodate as many tasks as possible at any one time. Unlike user-controlled partitions where the user must define subpartitions to run multiple tasks within a main partition, the Executive allocates the space for the tasks within a system-controlled partition.

System-controlled partitions are most effective when combined with the Shuffler (SHF).

If you selected DBMS-11 support (Question 1), SYSGEN automatically includes support for system-controlled partitions and, therefore, bypasses this question.

This option is not available for unmapped systems or for RSX-11S.

*** 34. Include support for the Shuffler? [Y/N]:**

The Shuffler (SHF) is a privileged task designed to minimize fragmentation within system controlled partitions. The Shuffler requires Executive support to run.

EXECUTIVE OPTIONS (Cont.)

Therefore, if you respond Yes to this question, SYSGEN then builds the Shuffler task (SHF) and includes it in your system image.

The Shuffler is not available for unmapped systems or for RSX-11S. If you did not select system-controlled partitions, this question does not appear. For more detailed information on using the Shuffler, refer to the RSX-11M/M-PLUS System Management Guide.

NOTE

If you intend to include the Shuffler in your target system, it should not be installed in a system-controlled partition.

*** 35. Queue manager and queued print spooler? [Y/N]:**

This option allows you to provide user-controlled spooling support for RSX-11M systems. See the RSX-11M/M-PLUS System Management Guide for a description of the features of RSX-11M print spoolers.

If you respond Yes, the required support is built into the Executive. If you respond No, you will be asked in the System Options Section whether or not you want to build the serial despooler.

When you respond Yes, SYSGEN automatically includes:

- Stop Bit Directive support
- Send/Receive Directive support
- Parent/Offspring Tasking Directive support

This option is only available for mapped RSX-11M systems.

*** 36. Group global event flags? [Y/N]:**

This option makes available 32(10) additional event flags for each user group on the system. Group global event flags are in addition to a single member's local event flags. In the UIC [303,26], for instance, 303 indicates the group number; the number 26 indicates one member in the group. If the members in group 303 were running a system that supported group global event flags, there would be 32 additional event flags to be shared among the members in the 303 group. Another group, say 300, would have 32 additional event flags to share among the members of that user group.

If you select this option, you get full support for Group Global Event Flag directives as well.

For more information on Group Global Event Flags, refer to the RSX-11M/M-Plus MCR Operations Manual.

EXECUTIVE OPTIONS (Cont.)

*** 37. Enter code for system directives**

This option includes system directives; each directive is indicated by the associated letter code:

A-Get Partition Parameters	G-Get Sense Switch
B-Get Task Parameters	H-Set System Time
C-Send/Receive	I-Stop Bit
D-Alter Priority	J-Specify Requested Exit AST
E-Extend Task	K-Parent/Offspring Tasking
F-Connect to Interrupt Vector	L-Parent/Offspring Tasking with Chaining

Enter an asterisk (*) to display the table of directives. Enter a percent sign (%) to include all directives. If you enter %, SYSGEN includes all valid directives listed here and proceeds immediately to the next question. In this case, there is no need to terminate input with a period (.). Ent a period (.) to terminate the question.

Refer to the RSX-11M/M-PLUS Executive Reference Manual for descriptions of the directives.

NOTE

If you do not select Get Partition Parameters (option A) and Get Task Parameters (option B), the MCR ASN, ATL, DEV, PAR, TAL, and TAS commands and many DIGITAL-supplied utilities (for example, PIP) will not execute cor ctly.

If you select DBMS-11 or communications products support, SYSGEN automatically includes the Get Partition Parameters, Get Task Parameters, and Extend Task directives.

If you selected the queue manager for your target system, SYSGEN automatically includes support for the Parent/Offspring Tasking directive.

If you select ANSI magtape support, error logging support, DBMS-11, the Queue Manager (QMG), the CO driver, communications products support, or the LA: (LPA11-K), SYSGEN automatically includes Send/Receive directive support.

If you select any K-series devices, Connect to Interrupt Vector support is included.

Parent/Offspring tasking with chaining is a superset of Parent/Offspring tasking. If you select DBMS-11, the queue manager, or either Parent/Offspring Tasking or Parent/Offspring Tasking with Chaining, SYSGEN automatically includes support for the Stop Bit directive.

If you select the Extend Task directive, SYSGEN automatically includes checkpointing support. This does not apply if you are generating a RSX-11S system.

EXECUTIVE OPTIONS (Cont.)

If you select the Specify Requested Exit AST directive, SYSGEN automatically includes AST support.

If the target processor does not have a switch register, SYSGEN does not allow the inclusion of the Get Sense Switch directive.

*** 38. Number of pre-allocated QIO packets [D R:0.-15. D:5.]:**

You can enhance I/O throughput by preallocating a number of I/O packets from the dynamic storage region, and by leaving them available for quick use by Queue I/O.

The Executive maintains a Last-In-First-Out (LIFO) list of preallocated I/O packets; specify the maximum size of this list with your decimal response to this question. When an I/O packet is required, the Executive removes one from this list. If the list is empty, the Executive allocates the packet from dynamic memory (a significantly slower operation). When an I/O packet is deallocated, the packet is linked back into the list, provided that the list is not full.

Thus, in each I/O request, two fast LIFO operations replace the slower general pool allocations and deallocations, saving several hundred microseconds. Some I/O requests involving an ACP require two I/O packets and, therefore, benefit twice as much.

Each I/O packet you preallocate requires 18 words from pool. To make the best use of this option, determine the average number of outstanding concurrent I/O requests on your system and enter that value as your response.

Enter a number in the range 0. through 15., indicating the number of packets to be preallocated.

The default is 5. When your system uses preallocated QIO packets (that is, when you specify any value greater than zero) your system takes advantage of QIO speed optimization.

Enter 0 to exclude preallocated QIO packets as well as QIO speed optimization.

*** 39. Size of data transfer vector in words [D R:0.-33. D:33]:**

The value you supply in response to this question specifies the size in words of the data transfer vector. The data transfer vector is a series of MOV instructions in a loop used by the Executive for optimizing data transfers in the Executive routine $BLXIO which is then used by the Shuffler. The greater the size of the data transfer vector, the faster the Executive transfers the data in $BLXIO. The trade-off is speed for pool size. The smaller the data transfer vector, the greater the pool size.

EXECUTIVE OPTIONS (Cont.)

Enter a number in the range 0(10) through 33(10) to specify the number of MOV instructions in the vector. If the size of the data transfer vector were 16, for example, a 36-word data transfer enters the loop control only 3 times rather than 36 times if there were only one MOV instruction in the vector.

The default vector size is 33(10). It is generally advisable to select the default vector size of 33(10).

If you specify a data transfer vector size that is greater than 0 but less than 5(10), SYSGEN forces that value to 5(10). The reason for this is that the data transfer vector is not really efficient until the number of MOV instructions in the loop is at least 5(10). However, you may specify a 0. In this case, SYSGEN builds the data transfer vector with a single MOV instruction in the loop.

This option does not apply to unmapped systems.

*** 40. Round-robin scheduling interval in ticks [D R:0.-1000. D:5]:**

When many competing memory-resident tasks have equal priority, the Executive tends to give CPU time to tasks that appear first in the Active Task List (ATL). Entries in the ATL with equal priority normally appear in the order in which the tasks were installed.

With the round-robin scheduling option, the Executive periodically rotates (when the specified number of ticks elapses) tasks of equal priority within the Active Task List, so that tasks of equal priority share CPU time.

Round-robin scheduling refers to the algorithm whereby each task of a group of tasks is successively given preference for available processor time. The actual algorithm in RSX-11M is used to locate the first task within each priority class that is not blocked from executing, give it processor time, and, when it completes, move that task to the end of its respective priority class. Tasks that are mainly intended for computation, with a minimal amount of I/O, execute in a round-robin fashion; whereas I/O-bound tasks tend to remain at the front of their respective priority class.

Round-robin scheduling does not affect the normal competition for CPU time by tasks with different priorities. It also does not affect tasks not in the range set by the response to Questions 41 and 42. Round-robin scheduling affects only those tasks in an ATL (in memory) that are not blocked, checkpointed, or in a partition wait queue.

Round-robin scheduling requires little Executive overhead (time and size).

If you want this option, enter a number in the range 1 through 1000(10). SYSGEN then asks Questions 41 and 42.

Enter 0 if you do not want this option.

The default is 5(10).

EXECUTIVE OPTIONS (Cont.)

NOTE

The tick interval value can be changed after SYSGEN by using the VMR or MCR SET /RNDC command.

*** 41. Highest priority class for consideration [D R:1.-249. D:150.]:**

Round-robin scheduling affects a specified range of priority classes. A typical range is 1(10) through 150(10). The permissible range is 1(10) to 249(10).

This entry provides the highest priority class eligible for round-robin scheduling. Default is 150(10).

This question appears only if you selected the round-robin scheduling option.

NOTE

The highest priority class value can be changed after SYSGEN by using the VMR or MCR SET /RNDH command.

*** 42. Lowest priority class for consideration [D R:1.-x. D:1.]:**

This is the lowest priority class eligible for round-robin scheduling.

The permissible range is 1(10) through x(10), where x is equal to the highest priority class entered in response to Question 41. The default is 1(10).

This question appears only if you select the round-robin scheduling option.

NOTE

The lowest priority class value can be changed after SYSGEN by using the VMR or MCR SET /RNDL command.

*** 43. Executive level disk swapping interval [D R:0-5000. D:y]:**

Disk swapping is an Executive feature that varies the priority of memory-resident tasks with the same priority, so that those tasks can share the use of memory resources. The feature swaps tasks to disk by using the swapping algorithm.

EXECUTIVE OPTIONS (Cont.)

The swapping algorithm creates an "effective" task priority by using the swapping interval (the response to this question) and the swapping priority (the response to Question 44). The swapping interval specifies a time parameter, in which the Executive scans the partition list and modifies the effective priority of a resident task. The swapping priority is an absolute numeric value that specifies the range through which the Executive varies a task's priority. (The range is negative swapping priority through positive swapping priority.)

The Executive uses a byte in the task header to maintain the swapping priority: symbol S$$WPR in RSX[illegible]C. The symbol S$$WPR is equated to the swapping priority specified [illegible] Question 44.

Each time a task is read into memory, the Executive initializes the swapping priority in the task header to the value +S$$WPR (for example, +5 if you specify 5 as the swapping priority in Question 44). Then, when the swapping interval expires, the Executive decrements the swapping priority of each memory-resident task by one until the task is checkpointed or until the swapping priority reaches the minimum value -S$$WPR (for example, -5).

After decrementing the swapping priority of each task in the partition, the Executive determines whether or not an eligible task on disk can checkpoint a task in the partition. The Executive compares the running priority of the nonresident task with the effective priority of the resident task (effective priority is the sum of the running priority and the swapping priority). If the nonresident task can fit into the resident task's space and if, due to the decrementing of swapping priority, the priority of the nonresident task is higher, the nonresident task can checkpoint the resident task.

Disk swapping applies to tasks competing for each main partition (except DEVICE and COMMON partitions) and for the highest priority, nonresident tasks assigned to those partitions.

If you select this option, SYSGEN automatically includes support for checkpointing.

The permissible range is 0(10) through 5000(10). The default (y) is a value that is equal to the round-robin scheduling interval multiplied by 6. The maximum default size is 5000(10). If the value of the default calculated for y exceeds 5000, SYSGEN defaults the value to the maximum size of 5000(10). If the round-robin scheduling interval was 0 (you excluded support), this default is 30(10).

To disable this option, enter 0.

NOTE

The disk swapping interval can be changed after SYSGEN by using the VMR or MCR SET /SWPC command.

This question does not appear for RSX-11S systems.

EXECUTIVE OPTIONS (Cont.)

*** 44. Swapping priority [D R:1.-20. D:5.]:**

The swapping priority determines the range over which lower priority tasks may checkpoint higher ones; the larger the swapping priority, the greater the range. With a swapping priority of "S", a task running at priority "P" will have an effective priority range (for checkpointing) from "P+S" to "P-S" as long as it resides in memory.

You can enter a number in the range 1(10) through 20(10). It is recommended that you enter the default swapping priority of 5(10).

This question appears only if you selected Executive-level disk swapping.

NOTE

The swapping priority can be changed after SYSGEN by using the VMR or MCR SET /SWPR command.

*** 45. Size of Dynamic Storage Region (Pool) in words [D R:256.-16384. D:1024.]:**

Rather than allocate a fixed amount of memory for each function, the RSX-11M Executive makes use of a dynamically allocated memory space called the Dynamic Storage Region (DSR), generally referred to as pool space. For example, the Executive uses this memory space to process I/O or time-dependent scheduling requests. As demands for space are made, the Executive allocates the necessary memory from pool using a first-fit algorithm. When allocated space is no longer needed, it is released back to the pool of available memory.

Pool requirements for a system depend on the configuration, application, and degree of system loading. Enough memory must be available to satisfy peak demands; otherwise a decrease in system performance occurs and the system could hang with a pool deadlock. On the other hand, if there is an unnecessarily large amount of pool space allocated, you may be wasting system resources (memory).

The maximum size of pool space is limited by physical memory in an unmapped system.

Appendix D specifies some RSX-11M functions that use dynamic memory. Use it to calculate how much memory you should allocate.

After you calculate the amount of pool space needed for your target system, add approximately 12 to 18 percent to cover possible pool fragmentation conditions.

Note that you can later extend this initial allocation using the MCR or VMR SET /POOL command.

This entry must be in multiples of two words. The permissible range of entries is 256(10) through 16384(10).

EXECUTIVE OPTIONS (Cont.)

This question appears for unmapped systems only. SYSGEN forces a minimum pool size of 1024(10) words for mapped systems, and expands the pool size to the maximum size possible during the System VMR Section of Phase II. (See the SET /POOL command in Chapter 10 of the RSX-11M/M-PLUS System Management Guide.)

The default is 1024(10).

*** 46. Seconds between printer not ready messages [D R:0.-255. D:30.]:**

SYSGEN asks this question if you included a line printer in the peripheral configuration and if you included TKTN support (the TKTN task prints the device not ready message).

Specify the number of seconds between printer-not-ready messages. An entry of 0 suppresses the messages altogether.

The default is 30(10). If you specify a value other than 0, the minimum value of this entry is 15(10).

*** 47. Seconds between card reader not ready messages [D R:0.-255. D:30.]:**

This question appears if you included a card reader in the peripheral configuration and if you included TKTN support (the TKTN task prints the device not ready message).

Specify the number of seconds between card reader not ready messages. An entry of 0 suppresses the messages altogether.

The default is 30(10).

If you enter a nonzero value, the minimum value of the entry is 15(10).

*** 48. System crash register and stack dump device CSR [O R:0-177700 D:177564]:**

If the system crashes and this option is included, the Executive stack and registers are output to the selected device.

Enter the CSR address of the device. The normal device is the console terminal, which has a CSR address of 177564. This is the default device.

Enter 0 to suppress this option.

If you specify a value other than 0, it can only be in the range 160000 through 177700(8).

EXECUTIVE OPTIONS (Cont.)

*** 49. Checkpointing [Y/N]:**

Checkpointing allows the Executive to displace tasks from a partition to yield memory to tasks of higher priority.

The goal of checkpointing is to avoid preempting the execution of lower priority tasks, unless a higher priority task can make use of the memory resources allocated to the lower priority task. Checkpointing optimizes the use of processor memory while maintaining a priority-scheduling algorithm.

In some cases, an activated task cannot execute because the partition where the task must execute is occupied. If the partition is occupied by a task (TASKA, for example) that is both checkpointable and has a priority lower than the task that is waiting (TASKB, for example), the Executive moves the task with the lower priority (TASKA) to disk, thus making room for the higher priority task (TASKB) waiting on disk. When the higher priority task (TASKB) is stopped or its priority is lowered, the lower priority task (TASKA) on disk moves back into memory to continue execution. This task (TASKA) continues execution from the point at which it was interrupted.

RSX-11M supports checkpointing in both user-controlled partitions and system-controlled partitions.

Respond Yes if you want checkpointing. Electing this option and answering No to Question 50 requires that you build each checkpointable task with its own contiguous checkpoint space, into which the executing task image can be swapped. Refer to the RSX-11M/M-PLUS Task Builder Manual, particularly to the information on using the /AL (allocate) switch. (SYSGEN automatically includes checkpointing if you selected Executive level disk swapping.)

Note that if you exclude checkpointing support, the Executive cannot support task checkpointing during terminal input.

If you select checkpointing, SYSGEN includes support for nonresident tasks (see Question 4). SYSGEN automatically includes checkpointing if you select Executive level disk swapping (Question 43), support for error logging (Question 24), or the Extend Task directive (Question 37).

This question appears for RSX-11S systems only if you chose DECnet support (Question 32, Executive Options).

*** 50. Checkpointing with system checkpoint file [Y/N]:**

Respond Yes if you want checkpointing with a system checkpoint file. This option allows checkpointing with a system checkpoint file rather than requiring contiguous checkpoint space for each checkpointable task image.

If you select checkpointing with a system checkpoint file, you must allocate space for the file when you start up the system, for example, in the STARTUP.CMD file. There is an ACS command included in the STARTUP.CMD file provided with your distribution kit. Refer to the ACS command in the RSX-11M/M-PLUS MCR Operations Manual for more information.

EXECUTIVE OPTIONS (Cont.)

If you select multiuser protection (Question 12), SYSGEN automatically includes support for checkpointing with the system checkpoint file.

This question appears only if you answer yes to checkpointing (Question 49) and if you are generating a mapped target system.

This question does not appear for RSX-11S systems.

*** 51. Crash dump analysis: A- PANIC B- Crash Dump Analysis (CDA) C- None [D: B]**

If you do not select the dump analysis option and a system failure occurs, it may not be possible for the user to capture vital data on the state of the system at failure time. The RSX-11M Guide to Writing an I/O Driver Manual describes the PANIC dump routine. The RSX-11M/M-PLUS Crash Dump Analyzer Reference Manual describes CDA in detail. The CDA crash dump routine is normally used for debugging new drivers or privileged tasks after the drivers or tasks crash the system. CDA provides a means of generating a formatted dump of memory on a line printer or a terminal.

Enter A if you want the PANIC dump routine.

Enter B (default) if you want Crash Dump Analysis (CDA) support. It is recommended that you select CDA support.

If you select A, SYSGEN does not ask Questions 52, 53, and 54; but does ask Question 55.

If you select B, SYSGEN asks Questions 52, 53, and 54; but not 55.

*** 52. CDA output notification device CSR [O R:160000-177700 D:177564]:**

This question appears only if you selected B (Crash Dump Analysis support) in Question 51.

Enter the CSR for the device that you want the system crash message sent to. Typically, this is the console device (177564(8)).

*** 53. Enter CDA memory dump device mnemonic (ddu:) [S R:3-4]:**

This question appears only if you selected B (Crash Dump Analysis support) in Question 51.

Enter the mnemonic and unit number of the device on which you want to output a memory dump in binary. Note that the memory dump device must be part of the target hardware configuration but is not necessarily generated into the target system. Supported devices are:

DB	DM	DY	DU (RA60, RC25, RX50 only)
DD	DR	MM	
DK	DT	MS	
DL	DX	MT	

EXECUTIVE OPTIONS (Cont.)

NOTE

If you choose DU as the crash dump device, SYSGEN will issue a warning that you cannot crash to a fixed-media disk (the RA80/81, the fixed-media portion of the RC25, and the RD51).

If possible, avoid using your system device as the crash dump device; CDA overwrites the contents of the crash dump device.

*** 54. Enter CDA memory dump device CSR [O R:160000-177700 D:<default>]:**

This question appears only if you selected B (Crash Dump Analysis support) in Question 51.

Enter the CSR address of the memory dump device. The default depends on the type of device you specify in Question 52 as the crash dump device:

Device Type	Default CSR	Device Type	Default CSR
DB	176700	DU	172510
DD	176500	DX	177170
DK	177404	DY	177170
DL	174400	MM	172440
DM	177440	MS	172522
DR	176700	MT	172522
DT	177342		

The allowable DU:-type dump devices are the RA60, RC25, and the RX50.

*** 55. Enter PANIC memory dump device CSR [O R:160000-177700 D:177564]:**

If you selected PANIC dump rather than CDA, enter the CSR address of the PANIC dump device. Normally, this is the CSR address of the console device, which is also the default.

This device must be a paper tape-, terminal-, or line printer-compatible device. The device must receive a single byte at a time.

*** 56. RT-11 emulation support? [Y/N]:**

This option allows you to include RTEM-11 support. Refer to your RTEM-11 documentation for details.

TERMINAL DRIVER OPTIONS

4.6 TERMINAL DRIVER OPTIONS SECTION

Your responses to these questions specify the RSX-11M terminal driver you want as part of your target system. You can also specify terminal driver options.

Terminal driver options are described fully in the RSX-11M/M-PLUS I/O Drivers Reference Manual.

* 1. Terminal driver desired (A/B/C/D, * prints table)

This option allows you to select the terminal driver you want to include in your system. RSX-11M systems use one of two terminal drivers:

- Half-duplex (three different versions)
- Full-duplex

Enter A to select the half-duplex terminal driver that allows you to specify the half-duplex terminal driver options that meet the needs of your target system.

Enter B to select the user-oriented half-duplex terminal driver. SYSGEN automatically includes the following terminal driver options when you select the user-oriented terminal driver:

- Automatic carriage return/line feed (Question 4)
- Task checkpointable during terminal input (Question 5). Note that this option requires Executive support for checkpointing. Therefore, if you did not include checkpointing support, this option is excluded when you select the user-oriented terminal driver.
- Unsolicited input character AST (Question 6). Note that this option requires Executive AST support. Therefore, if you did not include Executive AST support, this option is excluded for the user-oriented terminal driver.
- Write with CTRL/O cancellation (Question 7)
- Breakthrough write (Question 8)
- CTRL/R (retype) (Question 9)
- Get multiple characteristics (Question 11)
- Get terminal driver options (Question 13)
- Transparent read/write (Question 15)
- Settable case conversion for input (Question 16)
- Read after prompt (Question 17)

TERMINAL DRIVER OPTIONS (Cont.)

- Read with no echo (Question 18)
- Read with special terminator (Question 19)
- CRT rubout support (Question 20)
- Terminal-host synchronization (Question 21)
- User terminal input buffering (Question 22)
- Variable-length terminal input buffering (Question 23)

NOTE

If you want more or fewer options than what is automatically included with the user-oriented half-duplex terminal driver, you should select the tailorable half-duplex terminal driver (enter A).

Enter C to select the full-duplex terminal driver. This driver requires a mapped system and loadable driver support. SYSGEN automatically includes the following terminal driver options when you select the full duplex terminal driver:

- Passes form feeds directly to the terminal (Question 3)
- Automatic carriage return/line feed (Question 4)
- Task checkpointable during terminal input (Question 5). Note that this option requires Executive support for checkpointing. Therefore, if you did not include checkpointing support, this option is excluded when you select the full-duplex terminal driver.
- Write with CTRL/O cancellation (Question 7)
- Hold screen mode (Question 14)
- Transparent read/write (Question 15)
- Settable case conversion for input (Question 16)
- Read with no echo (Question 18)
- Read with special terminator (Question 19)
- Terminal-host synchronization (Question 21)
- User terminal input buffering (Question 22)
- Variable-length terminal input buffering (Question 23)
- LA30P support (Question 24)

If you include a DHV11 device in your system, SYSGEN automatically includes the full-duplex terminal driver and does not ask this question.

TERMINAL DRIVER OPTIONS (Cont.)

If you have not chosen a mapped system and loadable driver support, SYSGEN will exit. You should restart SYSGEN and choose the mapped system and the loadable driver support to include the DHV11 device.

Enter D to select the baseline terminal driver. Note that this driver and a multiuser protection system are mutually exclusive. This terminal driver (D) is a half-duplex terminal driver with minimum functionality. It has no SYSGEN options.

*** 2. Unsolicited input timeout value in seconds [D R:0.-255. D:120.]:**

This option is available with the full-duplex terminal driver only (C); the question does not appear if you responded A, B, or D to Question 1.

The full-duplex driver discards unsolicited input upon the expiration of the time-out value that you specify. Valid time-out range is 0 through 255(10) seconds.

Enter 0 to inhibit the unsolicited input timeout feature for full-duplex terminal driver.

Press the RETURN key for the default timeout value of 120 seconds, or specify the number of seconds (in the range 1 through 255(10)) to wait to timeout on unsolicited terminal input.

*** 3. Pass form feeds directly to the terminal? [Y/N]:**

This option appears only if you responded A or B to Question 1 (the tailorable or user-oriented half-duplex terminal driver).

The half-duplex driver normally converts a form feed into eight line feeds. Respond Yes to suppress this conversion.

NOTE

If your system includes an LA120 or an LA180S terminal, you should respond Yes.

This option adds approximately 24(10) words to the terminal driver.

*** 4. Automatic carriage return/line feed? [Y/N]:**

This option appears only if you responded A to Question 1 (the tailorable half-duplex terminal driver); the user-oriented driver and the full-duplex driver include the option by default.

If you respond Yes to this option (or if the option is included by default), the terminal driver generates a carriage return and line feed when the terminal buffer is filled on output or echo. (You can examine or alter terminal buffer size with the MCR SET /BUF command.)

This option adds approximately 70(10) words to the terminal driver.

TERMINAL DRIVER OPTIONS (Cont.)

*** 5. Task checkpointable during terminal input? [Y/N]:**

The option appears only if you responded A to Question 1 and you included Executive support for checkpointing.

If you select this option, checkpointable tasks can be displaced from memory by another task during terminal input.

This option adds approximately 110(10) words to the terminal driver. If your target system does not include DECnet and if you did not select the full-duplex terminal driver, this option adds approximately 160(10) words to the terminal driver.

*** 6. Unsolicited input character AST? [Y/N]:**

This option appears if you responded A or C to Question 1 and included Executive support for ASTs; the user-oriented and full-duplex drivers include this option by default if your target system includes Executive support for ASTs (Question 17 in the Executive Options Section).

If you respond Yes, a task that attaches to a terminal can specify an AST entry point upon receiving unsolicited input from a terminal (for example, CTRL/C attaches the task rather than MCR). This option adds approximately 160(10) words to the full-duplex terminal driver and approximately 70(10) words to the half-duplex terminal driver.

Without support for unsolicited input character AST, you cannot use EDT in character mode nor can you terminate RMD with a CTRL/Z. In addition, the I/O Exerciser (IOX) requires unsolicited input character AST support if it is to support the CTRL/C function.

If you do not select this option and intend to use RMD, the RMD task only displays the first page of output. However, it is still possible, through other means, to read subsequent pages of the RMD display. See the RSX-11M/M-PLUS System Management Guide for an explanation.

*** 7. Write with CTRL/O cancellation? [Y/N]:**

This question appears only if you responded A to Question 1.

If you respond Yes, a task that issues a write request with CTRL/O cancellation can print to the terminal when the target terminal has suppressed output with CTRL/O. This option adds approximately 16(10) words to the terminal driver.

*** 8. Breakthrough write? [Y/N]:**

This question appears if you responded A or C to Question 1. If you selected multiuser protection support, SYSGEN automatically includes this option.

TERMINAL DRIVER OPTIONS (Cont.)

If you respond Yes, a privileged task can issue a breakthrough write request that prints to a terminal regardless of current or outstanding I/O activity.

This option adds approximately 96(10) words to the full-duplex terminal driver and approximately 245(10) words to the half-duplex terminal driver.

NOTE

When you select this option, SYSGEN automatically includes terminal driver support for the CTRL/R (retype) option (Question 9). Together, these two options add approximately 160(10) words to the full-duplex terminal driver and approximately 275(10) words to the half-duplex terminal driver.

*** 9. CTRL/R (retype)? [Y/N]:**

This question appears if you responded A or C to Question 1 and did not select the breakthrough write option (Question 8).

If you respond Yes, the terminal driver sends to the terminal a carriage return and line feed followed by the contents of the input buffer whenever you type CTRL/R at the terminal.

This option adds approximately 64(10) words to the full-duplex terminal driver and approximately 32(10) words to the half-duplex terminal driver.

*** 10. Escape sequence handling? [Y/N]:**

This question appears if you responded A or C to Question 1.

If you respond Yes, the terminal driver recognizes and treats escape sequences as line terminators for all solicited input except read-pass-all or read-with-special-terminator requests.

This option adds approximately 128(10) words to the full-duplex terminal driver and approximately 160(10) words to the half-duplex terminal driver.

*** 11. Get multiple characteristics? [Y/N]:**

This question appears if you responded A or C to Question 1.

If you respond Yes, a task can determine physical characteristics (for example, CRT, VT52, slaved, or VT100) of individual terminals. The task RMD makes use of this option, for example.

TERMINAL DRIVER OPTIONS (Cont.)

If you selected the full-duplex terminal driver (C) and want the capability to display terminal characteristics, you must include support for Get Multiple Characteristics.

This option adds approximately 96(10) words to the full-duplex terminal driver and approximately 110(10) words to the half-duplex terminal driver.

Under most circumstances, you should include this terminal driver option.

*** 12. Set multiple characteristics? [Y/N]:**

This question appears if you responded A or C to Question 1.

If you respond Yes, a task can set or reset physical characteristics (for example, CRT, VT52, slaved, or VT100) of its TI: terminal. A privileged task can use this option to set the physical characteristics of any terminal in the system.

If you selected the full-duplex terminal driver (C) and want the capability to modify various terminal characteristics (see the MCR SET command), you must include support for Set Multiple Characteristics.

This option adds approximately 256(10) words to the terminal driver.

Under most circumstances, you should include this terminal driver option.

*** 13. Get terminal driver options? [Y/N]:**

This question appears if you responded A or C to Question 1.

If you respond Yes, a task can determine which of the terminal driver options were selected during system generation.

This option adds approximately 32(10) words to the full-duplex terminal driver and approximately 64(10) words to the half-duplex terminal driver.

*** 14. Hold-screen mode? [Y/N]:**

This question appears only if you responded A to Question 1.

If you respond Yes and your terminal(s) include special hardware, the terminals can break stream output into pages that fit on the screen. (Note that an unsolicited CTRL/C disables hold-screen mode.)

This option adds approximately 92(10) words to the terminal driver.

TERMINAL DRIVER OPTIONS (Cont.)

NOTE

When you select this option, SYSGEN automatically includes terminal driver support for the transparent read/write option (Question 15).

*** 15. Transparent read/write? [Y/N]:**

This question appears only if you responded A to Question 1 and did not include the hold-screen option (Question 14).

The terminal driver normally filters terminal input on both input and output. This permits the recognition of control characters that have special meaning (for example, ESCAPE) or require fill characters (for example, RETURN). If you respond Yes, the terminal driver provides support for I/O functions (IO.RAL and IO.WAL) that bypass character filtering and permit output of up to 32K bytes.

This option adds approximately 48(10) words to the terminal driver.

*** 16. Settable case conversion for input? [Y/N]:**

This question appears only if you responded A to Question 1.

The terminal driver normally accepts and echoes characters as received.

If you respond Yes, you can selectively enable input character conversion (using the MCR SET /[NO]LOWER command) so that the terminal driver can automatically convert lowercase to uppercase. This option also allows the terminal driver to recognize the brace character (175) and the tilde character (176) as ASCII characters rather than a form of escape when the terminal is set to lowercase.

This option adds approximately 30(10) words to the terminal driver.

*** 17. Read after prompt? [Y/N]:**

This question appears if you responded A or C to Question 1.

If you respond Yes, a read after a prompt request acts like a write to the terminal followed by a read. This reduces the overhead of one I/O request and eliminates context switching. Also, this option removes the execution window, provided the terminal is not attached, by which one task can prompt and another task initiate terminal I/O before the first task (the prompting task) has time to issue its read request.

This option adds approximately 128(10) words to the full duplex terminal driver and approximately 185(10) words to the half duplex terminal driver.

TERMINAL DRIVER OPTIONS (Cont.)

*** 18. Read with no echo? [Y/N]:**

This question appears only if you responded A to Question 1 and did not include multiuser protection support. (Multiuser protection support automatically includes this terminal driver option.)

If you select this option, you can issue the read functions IO.RLB, IO.RVB, and IO.RPR and specify that the driver not echo terminal input.

This option adds approximately 48(10) words to the terminal driver.

*** 19. Read with special terminator? [Y/N]:**

This question appears only if you responded A to Question 1 and did not include multiuser protection support. (Multiuser protection support automatically includes this terminal driver option.)

The line terminator for a normal read is the RETURN or ESCAPE. If you select this option, any character less than 40(8) or greater than 174(8) can terminate a read with a special terminator request. However, escape sequences cannot be recognized in this mode.

Note that if the terminal is set to lowercase, only 177(8) and characters less than 40(8) can act as terminators.

This option adds approximately 45(10) words to the terminal driver.

*** 20. CRT rubout support? [Y/N]:**

This question appears if you responded A or C to Question 1.

If you respond Yes, the terminal driver echoes rubouts or deletes on a CRT terminal as backspace-space-backspace; this option erases the character from the CRT screen when you press the RUBOUT or DELETE key.

This option adds approximately 64(10) words to the terminal driver.

*** 21. Terminal-host synchronization? [Y/N]:**

This question appears if you responded A to Question 1.

If you respond Yes, you can start and stop terminal output by typing CTRL/S (to stop) and CTRL/Q (to start). This option is useful for high-speed display terminals.

This option adds approximately 84(10) words to the terminal driver.

TERMINAL DRIVER OPTIONS (Cont.)

NOTE

If your system includes a VT50 terminal with the copier option or an LA120 or VT100 with a baud rate greater than 1200, you must respond Yes to this question.

*** 22. User terminal input buffering? [Y/N]:**

This question appears if you responded A to Question 1.

The terminal driver normally receives characters and stores the characters in the Executive address space until it receives a line terminator. Upon receiving a line terminator, the driver places the contents of the Executive address space into the requesting task's input buffer.

If you respond Yes, the driver, provided that the task is not checkpointable, places the input characters directly into the task buffer as the characters are received.

This option adds approximately 12(10) words to the terminal driver.

*** 23. Variable length terminal input buffering? [Y/N]:**

This question appears only if you responded A to Question 1.

Normally, terminal driver input buffers are 80 bytes long, which implicitly limits the maximum size of a terminal input request as well as the size of the buffer allocation from dynamic memory.

If you respond Yes, the terminal allocates buffers large enough to satisfy the read request. The largest buffer can be 255 bytes long.

This option adds approximately 24(10) words to the terminal driver.

*** 24. LA30P support? [Y/N]:**

This question appears only if you responded A to Question 1.

The LA30P DECwriter connects to the processor with a single buffered interface. Respond Yes only if your system includes an LA30P terminal; the terminal driver supports all other combinations of DIGITAL terminals and interfaces.

If you respond No, the second of two rapidly typed characters may be discarded by the terminal driver.

This option adds approximately 48(10) words to the terminal driver.

TERMINAL DRIVER OPTIONS (Cont.)

*** 25. Hardware unrecoverable input error notification? [Y/N]:**

This question appears only if you responded C to Question 1.

If you respond Yes, the full-duplex terminal driver detects and flags framing errors, character parity errors, and data overruns and then passes the input character(s) to the requesting task with notification of an input error (including type).

If you respond No, the driver ignores hardware unrecoverable input errors.

This option adds approximately 32(10) words to the terminal driver.

*** 26. Device independent cursor positioning? [Y/N]:**

This question appears only if you responded C to Question 1.

If you respond Yes, the full-duplex terminal driver supports terminal-independent cursor-positioning commands. When you specify a cursor-positioning character, the driver outputs a cursor-positioning character string before it outputs the buffer.

This option adds approximately 192(10) words to the terminal driver.

SYSTEM OPTIONS

4.7 SYSTEM OPTIONS SECTION

This section presents several options that let you tailor your system further. Read the description of each option carefully before making your selections.

*** 1. Include ANSLIB.OLB to support big-buffering? [Y/N]:**

This option allows you to include ANSLIB.OLB, which contains the routines necessary to support big-buffering for FCS. (If you need more information on big-buffering for FCS, see the RSX-11M I/O Operations Manual.)

If you respond Yes, SYSGEN creates ANSLIB.OLB as it would have if you had chosen ANSI magtape support in Question 13 of the Executive Options Section.

*** 2. Build library of ISA FORTRAN industrial/lab routines? [Y/N]:**

If you respond Yes to this question, SYSGEN builds the "Industrial Computer System FORTRAN Procedures for Executive Function and Process Input-Output (ISA SP61.1)" for the IC, IS, UD, AR, LA, LS, or IP devices in the system library. These routines (commonly known as the Purdue calls) comprise an interface of FORTRAN subroutines that conform to a formal standard approved by the Instrument Society of America. The standard deals with three areas of real-time systems: the Executive interfaces, the process input-output function interfaces, and bit string manipulation.

If you include only one of the previously named devices, SYSGEN puts the necessary routines in [1,1]SYSLIB.OLB of the privileged object disk (the baseline disk for the big disk distribution kit and EXCPRV for the RL01/02 distribution kit).

However, if you specify more than one of those devices for your target system, SYSGEN builds individual libraries of routines for each device. Some routines for a device have the same name as some routines for another device, and the different libraries are necessary to contain the different routines:

Device	Library
AR/LS	[1,1]LPSLIB.OLB
IC	[1,1]ICSLIB.OLB
IP	[1,1]PCSLIB.OLB
IS	[1,1]ISLIB.OLB
LA	[1,1]LPALIB.OLB
UD	[1,1]UDCLIB.OLB

If you did not specify one of these devices in Question 15 of the Target Configuration Section, this question does not appear.

SYSTEM OPTIONS (Cont.)

*** 3. Build the PLAS resident FCS? [Y/N]:**

If you respond Yes, a copy of the FCS routines reside in a common area in memory (FCSRES). Tasks can then link to this resident library of FCS routines rather than contain a copy of the FCS routines in their task image. Tasks that use FCS and are linked to FCSRES are generally smaller than tasks containing their own FCS routines. Therefore, they task-build faster, take up less disk space, and load faster. In addition, if you choose this option, SYSGEN optionally builds most utilities to link to FCSRES (the introductory text in Chapter 7 lists some of those utilities). If you select this option, SYSGEN task-builds several privileged tasks during Phase II to link to FCSRES.

Frequently, a highly overlaid task has FCS overlays. Linking to FCSRES means fewer overlays in this case.

If you have selected ANSLIB.OLB (either by choosing ANSI magtape support or by selecting ANSLIB for big buffering), Phase II of SYSGEN builds FCSRES using ANSLIB.OLB.

If you are building a system with a relatively small amount of memory, you may not want this option. The 6K FCSRES remains in memory.

This question appears only if you are generating a mapped RSX-11M system and only if you selected the option for memory management (PLAS) directives in the Question 7 Executive Options Section earlier in Phase I.

This question does not appear for RSX-11S systems or if you did not select FCP support in Question 2 of the Executive Options Section.

*** 4. Code for FCP (A/B/C/D/E, * prints table) [D: <default>):**

If you selected Files-11 ACP (FCP) support in Question 2 of the Executive Options Section, SYSGEN displays this question to let you select the version of FCP best suited to your application needs and memory limits.

You may select from five FCPs. The first four versions of FCP (A,B,C, and D) have the same functionality. However, the performance of each version differs greatly. Read the descriptions below carefully before making your selection.

A. MINIMUM (FCPMIN)

This version of FCP is not recommended for general use. It should be used only when size is critical. It runs in 2K words of memory and is heavily overlaid.

This version does not support buffer caching or other performance optimization features. Furthermore, it does not optimize directory operations.

SYSTEM OPTIONS (Cont.)

For example, an application running stand-alone that opens large contiguous files and does no additional file I/O, except for reading and writing to those files may get adequate performance using the MINIMUM FCP.

The MINIMUM FCP is available on both mapped and unmapped RSX-11M systems.

Enter a response of A to choose this version of FCP.

B. SMALL (FCPSML)

This version of FCP is heavily overlaid and supports limited performance optimization features. It runs in approximately 2.5K words of memory.

The SMALL FCP requires from 10 to 100 times more I/O for such operations as looking for directories and opening files than the larger versions of FCP. However, for many applications, it provides satisfactory response. Using a larger version of FCP that results in more checkpointing or swapping may result in reduced performance even in a program development environment.

The SMALL FCP is available on both mapped and unmapped RSX-11M systems. The SMALL FCP is the default FCP for unmapped RSX-11M systems.

Enter a response of B to choose this version of FCP.

C. MIDDLE (FCPMDL)

Most ACP I/O requests require only a few additional I/O operations with this version of FCP. The MIDDLE FCP generally provides the best performance without using undue amounts of memory.

The MIDDLE FCP provides buffering for caching of directories and the bitmap, which significantly increases performance in most cases. The MIDDLE FCP provides additional buffer space for about 20 open files and accessed directories, and, therefore, minimizes the use of system pool. This FCP uses approximately 5K words of memory.

The MIDDLE FCP is available only on mapped RSX-11M systems. The MIDDLE FCP is the default FCP for mapped RSX-11M systems.

Enter a response of C to choose this FCP.

D. LARGE (FCPLRG)

This FCP provides the maximum performance. It has no overlays, thus it has no system overhead or I/O overhead for executing any code sequence. The LARGE FCP has the maximum number of buffers for all operations (such as creating, extending, and deleting files, and directory operations) as well as a large directory buffer. The large directory buffer maximizes performance with large directories. This version also provides additional buffer space for about 20 open files and accessed directories, minimizing the use of system pool.

SYSTEM OPTIONS (Cont.)

The LARGE FCP uses approximately 10K words of memory.

The LARGE FCP is available only on mapped RSX-11M systems.

Enter a response of D to choose this version of F11ACP.

E. OTHER

Enter a response of E to this question if you intend to supply your own FCP. The following are general guidelines for assembling, task-building, and installing your FCP in the system image:

- Following the completion of Phase I, assemble your FCP using [11,10]RSXMC.MAC (the Executive assembly prefix file created by SYSGEN) and [1,1]EXEMC.MLB (the Executive macro library) to produce FCP object file(s).
- Task build your FCP in Phase II when SYSGEN pauses for that purpose. The FCP should be built using RSX11M.STB (the Executive symbol table file) which can be found in UIC [1,54] for mapped systems and [1,50] for unmapped systems.
- During Phase II, SYSGEN does not ask if you wish to edit SYSVMR.CMD but instead automatically pauses to allow you to edit SYSVMR.CMD. You must edit SYSVMR.CMD at that time to include the command to install your FCP in the system image.

For systems with several high-performance disks, it is possible to increase file system throughput by mounting each volume with a separate FCP. Distinct FCPs allow a separate pool of FCBs (File Control Blocks) for each disk volume in each FCP partition and allow overlapping directory requests on each volume.

The FCP default name algorithm of the MOUNT command simplifies specifying separate FCPs (see the RSX-11M/M-PLUS MCR Operations Manual).

It is recommended that the file system FCP not share a user-partition with tasks that perform file-structured I/O, especially in systems with minimal user memory. The operation of RSX-11M is heavily dependent on the file system. Nearly all tasks request processing from it. Thus, for a system to operate properly, the file system must be in a partition where it can react promptly. Most tasks request an I/O operation through an FCP, and, while this I/O operation is in progress, the tasks cannot be checkpointed. Thus, if the FCP is running in the same partition, it may not be able to be loaded into memory to process the request and a deadlock situation can occur.

* 5. Build Post Mortem Dump (PMD)? [Y/N]:

This option lets you specify whether or not you want to have the Post Mortem Dump (PMD) task-built during Phase II. The RSX-11M/M-PLUS Task Builder Manual describes the PMD task.

This question does not appear for RSX-11S systems.

SYSTEM OPTIONS (Cont.)

*** 6. Build the Resource Monitoring Display task (RMD)? [Y/N]:**

This option lets you specify whether or not you want RMD task-built during Phase II. If you select this option and if you did not previously select support for Asynchronous System Traps (Question 17 in the Executive Options Section), unsolicited terminal input character AST (Question 6 in the Terminal Driver Options Section), and Get Multiple Terminal Characteristics (Question 11 of the Terminal Driver Options Section), SYSGEN forces support for them at this time.

See the RSX-11M/M-PLUS System Management Guide for details on RMD.

This question does not appear for RSX-11S systems.

*** 7. Build the non-queue manager print spooler (PRT)? [Y/N]:**

If you did not select support for the queue manager in Question 35 of the Executive Options Section, this option permits you to build the serial despooler. See the RSX-11M/M-PLUS System Management Guide for details on the nonqueue manager print spooler.

This question does not appear for RSX-11S systems.

*** 8. Do you want DIGITAL Command Language (DCL)? [Y/N]:**

DCL is an alternate CLI (Command Line Interpreter) supplied by DIGITAL. It is a user-oriented command language. Refer to the RSX-11M/M-PLUS Command Language Manual for further information on DCL.

If you have not previously included the following options in your target system, SYSGEN automatically includes them when you respond Yes to this question:

- Install, request, and remove on exit (Question 21 of the Executive Options Section)
- Asynchronous System Traps (Question 17 of the Executive Options Section)
- Get Task Parameters directive (Question 37 of the Executive Options Section)
- The Parent Offspring Tasking with Chaining (Question 37 of the Executive Options Section)
- The Stop Bit directive (Question 37 of the Executive Options Section)
- The Specify Requested Exit AST (Question 37 of the Executive Options Section)

This option is not available for RSX-11S, unmapped systems, or RSX-11M systems without multiuser protection.

SYSTEM OPTIONS (Cont.)

*** 9. Enter the number of user-written CLIs [D R:<0-MAX> D:0]:**

A CLI (Command Line Interpreter) is a task that receives all unsolicited input from user terminals. The function of a CLI is to interpret and execute the unsolicited input as commands. The commands are predefined by the CLI. (MCR is the system CLI on RSX-11M.)

If you select this option, SYSGEN provides you with the necessary Executive support for alternate CLIs. Refer to the RSX-11M/M-PLUS System Management Guide for details on writing a CLI.

The maximum number of CLIs supported (in any combination) is 16. Therefore, the maximum number of user-written CLIs (<max>) is 16 minus the number of CLIs currently in the target system (where MCR, DCL, and DECnet are CLIs).

MCR (the system CLI) is always present on RSX-11M systems. DECnet, though it is included as one of the possible CLIs, does not require alternate CLI support. DCL, an alternate CLI supplied by DIGITAL, does require alternate CLI support. If you select DCL as an option, SYSGEN automatically includes alternate CLI support.

Alternate CLI support is not available for RSX-11S, unmapped systems, or RSX-11M systems without multiuser protection.

*** 10. Do you want pool monitoring and low pool recovery (PMT)? [Y/N]:**

If you respond Yes to this question, SYSGEN includes the Pool Monitor Task (PMT) in your target system. PMT is a 1K- to 2K-word privileged task that runs at least once a minute to monitor pool fragmentation. In addition, this option includes code in the Executive that monitors the size of pool and notifies PMT whenever a significant change in the pool size occurs.

PMT enables checkpointing for itself whenever it detects a normal pool condition and disables checkpointing when pool is low or the largest pool fragment is smaller than the size of the CLI buffer. The latter guarantees that pool resources are always available for the PMT task to execute.

Whenever either the Executive or PMT determines that pool resources are low, PMT issues a warning to logged-on terminals that pool is low and requests that users on the system exit from their active tasks. In addition, PMT displays specific information at the console terminal about the amount of free pool space and the size of the largest pool fragment.

If PMT detects extreme pool fragmentation (that is, if the largest pool fragment is less than the size of the CLI command buffer), PMT also displays on the console terminal a list of abortable tasks in memory and requests that the system manager abort one or more of them.

The SET /PLCTL command (described in the RSX-11M/M-PLUS MCR Operations Manual) allows you to control pool limit parameters. For more details on PMT, see the RSX-11M/M-PLUS System Management Guide.

SYSTEM OPTIONS (Cont.)

If you select this option and have not selected support for AST, Cancel Selective Marktimes, system-controlled partitions, and Specify Requested Exit AST (Questions 17, 18, 33, and 37 of the Executive Options Section), SYSGEN forces support for them at this time.

This option is only available for mapped RSX-11M systems.

*** 11. What name would you like to give your system? [D: <default>]:**

This option allows you to assign a name to your system to distinguish it from other RSX-11M systems you may have. The following tasks all make use of the system name:

BRO	HEL	RMD
BYE	PMT	SHUTUP

The name must be from one through six alphanumeric characters. A name with less than six characters is padded to the right with spaces.

The default response for RSX-11M systems is RSX11M.

The default response for RSX-11S systems is RSX11S.

*** 12. Do you want SPM-11 support [Y/N]:**

If you respond Yes, SYSGEN includes support for the Software Performance Monitor (SPM-11M) for RSX-11M systems. Refer to your SPM-11M documentation for details.

To include SPM-11M support, you must have the following hardware:

- Mapped system
- Expansion space for the KW11-P programmable clock provided with the SPM-11M package
- Extended Instruction Set (EIS)

If you have not previously included the following options in your target system, SYSGEN automatically includes them when you respond Yes to this question:

- Asynchronous System Traps (Question 17, Executive Options Section)
- The Get Task Parameters directive (Question 37, Executive Options Section)
- The Extend Task directive (Question 37, Executive Options Section)
- The Get Partition Parameters directive (Question 37, Executive Options Section)

SYSTEM OPTIONS (Cont.)

- The Send/Receive directive (Question 37, Executive Options Section)
- Checkpointing to a system checkpoint file (Question 50, Executive Options Section)

It is recommended that you have memory management (PLAS) support (Question 7 of the Executive Options Section) for SPM-11M. Without PLAS support, SPM-11M buffering is limited to 4K words, and overflows may occur during data collection resulting in a loss of data. With PLAS support, SPM-11M buffers can be allocated up to 32K words.

However, if you choose not to include PLAS support, but you still want SPM-11M support, the following message will appear:

```
Because PLAS was not included,
the Data Collection (COL) task's buffer will
be limited to 4K word static common.
```

This question does not appear for RSX-11S systems, unmapped systems, or systems without EIS support.

PERIPHERAL OPTIONS

4.8 PERIPHERAL OPTIONS SECTION

This section of questions describes the peripheral devices. To make references to specific device questions easier, the questions in this section are listed by the device mnemonic in alphabetical order, rather than by question numbers. Your responses to the questions define unique hardware and software information that RSX-11M uses to communicate with peripheral devices. SYSGEN generates questions only for those devices you specified in response to Question 15 of the Target Configuration Section.

Enter the device-dependent parameters which define addressing information as well as special attributes for the peripheral devices. SYSGEN displays a prompt line describing the required parameters and then a specific device question, which includes any default values for the parameters. (See Example 4-1 at the end of this chapter for typical SYSGEN prompts and questions for the Peripheral Options Section.)

For example, if you selected loadable driver support, the general form of a SYSGEN prompt is:

*** Enter [L/R,] parameter1, parameter2,...parametern for:**

where:

L/R — An optional parameter that specifies whether the driver is loadable (L) or resident (R). Note that you specified the default value for this parameter in your response to Questions 15 and 16 of the Executive Options Section. To have loadable driver support, you must answer Yes to Executive Options Question 15. The default for loadable or resident drivers (in the Peripheral Options Questions) is based on your response to Question 16 in the Executive Options Section. If you do not, however, select loadable driver support (that is, if you answer No to Question 15 in the Executive Options Section), all drivers for your target system are resident and you cannot override that default in this section.

The process control drivers (UDC, ICS/ICR, and DRS/DSS drivers) and the VT11/VS60 graphics driver are not loadable; this parameter does not appear for these drivers since they are always resident.

The full-duplex terminal driver is always loadable; this parameter does not appear for the full-duplex terminal driver.

If you override the default (specify an L or an R), you must terminate this parameter with a comma (,), even if it is the only parameter on the line.

parameter — A device-dependent parameter such as CSR or vector address.

PERIPHERAL OPTIONS (Cont.)

If you did not select loadable driver support, the general form of a SYSGEN prompt is:

Enter parameter1, parameter2,...parametern for:

where parameters 1, 2, through n are device-dependent parameters.

In the SYSGEN prompts, parameters enclosed in brackets ([]) are permitted only in the response for the first controller. Parameters enclosed in parentheses (()) are required only if the indicated option is present in the target system.

Some devices require common parameters. To display the specific device question, SYSGEN groups the devices that require common parameters together and then presents them on the same SYSGEN prompt line.

The device-specific questions display default values for the parameters listed in the SYSGEN prompt line. When the question does not display a parameter, you must enter a parameter value. A comma (,) is the parameter delimiter. Note that blanks or tabs are not permitted between parameters.

When you specify a required parameter or override the default value, SYSGEN checks the acceptable range for each parameter. If the value you enter is not within the acceptable range, SYSGEN issues an error message that identifies the parameter by number, according to its position in the prompt line. Note that if your system includes loadable driver support, the optional L/R parameter is not included in the parameter count. For example, if you enter 300 as the CSR address for a CR11 controller SYSGEN displays:

SGN -- Parameter (#2) "300" out of range 160000 to 177700 -- RETRY

and then repeats the question. The number in parentheses is the parameter count (excluding L/R if applicable) and the value in quotes is the invalid parameter.

CAUTION

When you enter a numeric value, do not include a period (to specify a decimal number) or a pound sign (to specify an octal number). This causes an error; SYSGEN attempts to validate your response and does not permit explicit decimal or octal entries.

Enter numeric values within the acceptable range. SYSGEN interprets the response to be octal or decimal as required.

Refer to the description accompanying each question if you are unsure of the base for a specific numeric response.

PERIPHERAL OPTIONS (Cont.)

The following is a detailed description of all the peripheral questions. All CSR and vector addresses are octal values. All other values to be input are appropriately defined as octal or decimal.

*** AD controller 0 [D:176770]**

Enter the CSR address (the default value is 176770) and the number of A/D channels (there is no default for this parameter) for the first AD01-D controller.

The AD01-D analog-to-digital converter is a noninterrupt device. Therefore, you do not enter an interrupt vector address.

The acceptable range for the number of A/D channels is 1 through 64(10).

If you do not enter the default value for the CSR address, the acceptable range is 160000 through 177700.

There is no default CSR address for subsequent AD01-D controllers; you must enter a value within the acceptable range.

*** AF controller 0 [D:134,172570]**

Enter the interrupt vector address (the default value is 134), the CSR address (the default value is 172570), and the number of A/D channels (there is no default for this parameter) for the first AFC11 controller.

The acceptable range for the number of A/D channels is 1 through 1024(10).

If you do not enter the default values for the vector and CSR assignments, the acceptable range is 60 through 774 for the vector and 160000 through 177700 for the CSR.

There is no default CSR address for subsequent AFC11 controllers; you must enter a value, within the acceptable range, for the vector and CSR addresses as well as the number of A/D channels.

*** AR controller 0 [D:,170400,,,,,170420]**

The clock vector address for the AR11 controller is assigned from the floating vector space starting at location 300(8). It is located at an offset of four from the beginning of the AR11 vector space. Thus, there is no default clock vector address for the AR11.

Enter a clock vector address between 300 and 774(8). Consult your DIGITAL Field Service Representative if the clock vector address is unknown.

PERIPHERAL OPTIONS (Cont.)

The standard CSR address for the AR11 is 170400. Specify the address of the first word of the AR11 CSR group (the default value is 170400). If you do not enter the default CSR address, the acceptable range is 160000 through 177700.

The polarity mask word specifies whether an individual channel is unipolar or bipolar; it corresponds one-to-one with the 16 possible channels. A 1-bit designates a unipolar channel and a 0-bit designates a bi-polar channel. The acceptable range for the polarity mask word is 0 through 177777(8) (0 specifies 16 bi-polar channels, 177777 specifies 16 unipolar channels).

The AR11 module includes a D/A converter. However, support for the D/A is optional in the driver. If you do not include D/A support enter NO for parameter 4; the driver will be significantly smaller.

The maximum number of samples must be evenly divisible into 10,000 and within the acceptable range of 1 through 2500(10).

The AR11 does not include the 16-bit digital I/O option that is available with the LPS11. However, you can achieve the same functionality by using the DR11-K. If the DR11-K is present, enter DRK in your response string just prior to the CSR address of the DR11-K; otherwise, enter NO as the last parameter in your response. The DR11-K must be jumper selected to use the 16 individual input lines without interrupts. If the DR11-K option is present, enter the CSR address of the DR11-K (the default value is 170420). If you do not enter the default DR11-K CSR address, the acceptable range is 160000 through 177700.

Subsequent AR11 controllers default only the CSR address of the DR11-K option; you must enter the other values within the acceptable ranges. Also, if subsequent AR11 controllers do not include the DR11-K option, you must exclude this parameter.

*** CR controller 0 [D:230,177160]**

Enter the interrupt vector address (the default value is 230) and the CSR address (the default value is 177160) for the first CR11 card reader controller.

If you do not enter the default values for the vector and CSR assignments, the acceptable range is 60 through 774 for the vector and 160000 through 177700 for the CSR.

There is no default CSR or vector address for subsequent CR11 controllers; you must enter values within the acceptable ranges.

*** CT controller 0 [D:260,177500]**

Enter the interrupt vector address (the default value is 260) and the CSR address (the default value is 177500) for the first TA11 cassette controller.

PERIPHERAL OPTIONS (Cont.)

If you do not enter the default values for the vector and CSR assignments, the acceptable range is 60 through 774 for the vector and 160000 through 177700 for the CSR.

There is no default CSR or vector address for subsequent TA11 controllers; you must enter values within the acceptable ranges.

```
* DB controller 0 [D:254,176700,,0,0]
```

Enter the interrupt vector address (the default is 254), the CSR address (the default is 176700), the number of RP04/05/06 drives (there is no default for this parameter), the unit number of the first drive (the default for the first physical unit number is 0), and whether or not the controller supports offset recovery (the default is 0, for offset recovery) for the first RH11 or RH70 controller.

Offset recovery support provides a higher degree of data integrity in environments where disk packs are frequently moved from drive to drive. This support moves the disk head on either side of the cylinder center line in an attempt to pick up a stronger signal. Thus, offset recovery support allows data to be read in instances where it could not otherwise be read.

If you use the default values (enter two commas (,,) followed by the number of drives), the acceptable range for the number of drives is 1 through 8(10).

If you do not use the default values, the acceptable ranges are:

Vector	60 through 774(8)
CSR	160000 through 177700(8)
Number of drives	1 through 8(10)
Unit number of first drive	0 through 7(10)
Offset recovery	0 or NO

Subsequent RH11 or RH70 controllers default only the unit number of the first drive (0).

NOTE

You can only specify offset recovery support for the first DB controller. If you include support for the first controller, you automatically include offset recovery support for subsequent controllers. Likewise, if you exclude support, you exclude offset recovery support for subsequent controllers.

After you enter the parameters for each RH11 or RH70 controller included in your system, SYSGEN immediately prompts for the drive type.

PERIPHERAL OPTIONS (Cont.)

*** DB Contr 0 unit 0 is an RP04/05/RP06 [D:RP06]**

This question immediately follows parameter specification for each DB controller. You must specify the type of drive. Enter RP04, RP05, or RP06 (the default response).

SYSGEN repeats this question for each device unit specified for each controller.

*** DD controller 0 [D:300,176500]**

Enter the interrupt vector address (the default value is 300), the CSR address (the default value is 176500), and the number of DECtape II drives (there is no default for this parameter) for the first TU58 controller.

The acceptable range for the number of DECtape II drives is 1 through 2(10).

If you do not enter the default values for the vector and CSR assignments, the acceptable range is 60 through 774 for the vector and 160000 through 177700 for the CSR.

There is no default CSR or vector address for subsequent TU58 controllers; you must enter values, within the acceptable ranges, for the vector and CSR assignments as well as the number of drives.

*** DF controller 0 [D:204,177460]**

Enter the interrupt vector address (the default value is 204) and the CSR address (the default value is 177460) for the first RF11 controller.

If you do not enter the default values for the vector and CSR assignments, the acceptable range is 60 through 774 for the vector and 160000 through 177700 for the CSR.

There is no default CSR or vector address for subsequent RF11 controllers; you must enter values within the acceptable ranges.

*** DK controller 0 [D:220,177404]**

Enter the interrupt vector address (the default value is 220), the CSR address (the default value is 177404), and the number of RK05 drives (there is no default value for this parameter) for the first RK11 controller.

The CSR for the DK device is not the first register in the DK register set. The default CSR address displayed with this question is the actual CSR address for this device.

PERIPHERAL OPTIONS (Cont.)

The acceptable for the number of RK05 drives is 1 through 8(10).

NOTE

An RK05F is a fixed media RK05 drive equivalent to two removable RK05 drives. Specify every RK05F as two RK05s.

If you do not enter the default vector and CSR assignments, the acceptable range is 60 through 774 for the vector and 160000 through 177700 for the CSR.

*** DL controller 0 [D:160,174400]**

Enter the interrupt vector address (the default value is 160), the CSR address (the default value is 174400), and the number of RL01/02 disk drives (there is no default for this parameter) for the first RL11/RLV11 (for RL01s) or RL21/RLV21/RLV12 (for RL02s) controller.

The acceptable range for the number of RL01/02 disk drives is 1 through 4(10).

If you do not enter the default values for the vector and CSR assignments, the acceptable range is 60 through 774 for the vector and 160000 through 177700 for the CSR.

There is no default CSR or vector address for subsequent RL11/RLV11 or RL21/RLV21/RLV12 controllers; you must enter values, within the acceptable ranges, for the vector and CSR assignments as well as the number of RL01/02 drives.

*** DL Contr 0 unit 0. is an RL01/RL02 [D:RL01]**

This question immediately follows parameter specification for each DL controller. You must specify the type of drive. Enter either RL01 (the default response) or RL02.

SYSGEN repeats this question for each device unit specified for each controller.

*** DM controller 0 [D:210,177440,,0]**

Enter the interrupt vector address (the default value is 210), the CSR address (the default value is 177440), the number of RK06/07 disk drives (there is no default for this parameter), and whether or not the controller is to support offset recovery (the default 0 is to include offset recovery support) for the first RK611 controller.

The acceptable range for the number of RK06/07 drives is 1 through 8(10).

PERIPHERAL OPTIONS (Cont.)

Offset recovery support provides a higher degree of data integrity in environments where disk packs are frequently moved from drive to drive. This support moves the disk head on either side of the cylinder center line in an attempt to pick up a stronger signal. Thus, offset recovery support allows data to be read in instances where it could not otherwise be recovered.

If you do not use the default vector and CSR assignments, the acceptable range is 60 through 774 for the vector and 160000 through 177700 for the CSR.

There is no default CSR or vector address for subsequent RK611 controllers; you must enter values, within the acceptable ranges, for the vector and CSR assignments as well as the number of RK06/07 drives.

NOTE

You can only specify offset recovery support for the first controller. If you include support for the first RK611 controller, you automatically include offset recovery support for subsequent controllers. Likewise, if you exclude support, you exclude offset recovery support for subsequent RK611 controllers.

*** DM Contr 0 unit 0. is an RK06/RK07 [D:RK06]**

This question immediately follows parameter specification for each DM controller. You must specify the type of drive. Enter either RK06 (the default response) or RK07.

SYSGEN repeats this question for each device unit specified for each controller.

*** DP controller 0 [D:254,176714]**

Enter the interrupt vector address (the default value is 254), the CSR address (the default value is 176714), and the number of RP02/03 disk drives (there is no default for this parameter) for the first RP11 controller.

The CSR for the DP device is not the first register in the DP register set. The default CSR address displayed with this question is the actual CSR address for this device.

The acceptable range for the number of RP02/03 disk drives is 1 through 8(10).

If you do not enter the default values for the vector and CSR assignments, the acceptable range is 60 through 774 for the vector and 160000 through 177700 for the CSR.

PERIPHERAL OPTIONS (Cont.)

There is no default CSR or vector address for subsequent RP11 controllers; you must enter values, within the acceptable ranges, for the vector and CSR assignments as well as the number of RP02/03 drives.

*** DP Contr 0 unit 0. is an RP02/RP03 [D:RP03]**

This question immediately follows parameter specification for each DP controller. You must specify the type of drive. Enter either RP02 or RP03 (the default response).

SYSGEN repeats this question for each device unit specified for each controller.

*** DR controller 0 [D:254,176700,,0,0]**

Enter the interrupt vector address (the default is 254), the CSR address (the default is 176700), the number of RM02/03/05/80/RP07 drives (there is no default for this parameter), the physical unit number of the first drive (the default is 0), and whether or not the controller supports offset recovery (the default is 0, for offset recovery) for the first RH11 or RH70 controller.

Offset recovery support provides a higher degree of data integrity in environments where disk packs are frequently moved from drive to drive. This support moves the disk head on either side of the cylinder center line in an attempt to pick up a stronger signal. Thus, offset recovery support allows data to be read in instances where it could not otherwise be read.

If you use the default values (enter two commas (,,) followed by the number of drives), the acceptable range for the number of drives is 1 through 8(10).

If you do not use the default values, the acceptable ranges are:

Vector	60 through 774(8)
CSR	160000 through 177700(8)
Number of drives	1 through 8(10)
Unit number of first drive	0 through 7(10)
Offset recovery	0 or NO

Subsequent RH11 or RH70 controllers default only the unit number of the first drive (0).

NOTE

You can only specify offset recovery support for the first DR controller. If you include support for the first controller, you automatically include offset recovery support for subsequent controllers. Likewise, if you exclude support, you exclude offset recovery support for subsequent controllers.

PERIPHERAL OPTIONS (Cont.)

*** DR Contr 0 unit 0. is an RM02/03/05/80/RP07 [D:RM03]**

This question immediately follows parameter specification for each DR controller. You must specify the type of drive. Enter either RM02, RM03 (the default response), RM05, RM80, or RP07.

SYSGEN repeats this question for each device unit specified for each controller.

*** DS controller 0 [D:204,172040,,0]**

Enter the interrupt vector address (the default value is 204), the CSR address (the default value is 172040), the number of RS03/04 disk drives (there is no default value for this parameter), and the physical unit number of the first RS03/04 drive (the default value is 0) for the first RH11 or RH70 controller.

The acceptable range for the number of RS03/04 drives is 1 through 8(10).

If you do not use the default values, the acceptable ranges are:

Vector	60 through 774(8)
CSR	160000 through 177700(8)
Number of drives	1 through 8(10)
Unit number of first drive	0 through 7(10)

Subsequent RH11 or RH70 controllers default only the unit number of the first drive (0).

*** DS Contr 0 unit 0. is an RS03/RS04 [D:RS04]**

This question immediately follows parameter specification for each DS controller. You must specify the type of drive. Enter either RS03 or RS04 (the default response).

SYSGEN repeats this question for each device unit specified for each controller.

*** DT controller 0 [D:214,177342]**

Enter the interrupt vector address (the default value is 214), the CSR address (the default value is 177342), and the number of DECtape drives (there is no default for this parameter) for the first TU56 controller.

The CSR for the DT device is not the first register in the DT register set. The default CSR address displayed with this question is the actual CSR address for this device.

PERIPHERAL OPTIONS (Cont.)

The acceptable range for the number of DECtape drives is 1 through 8(10).

If you do not enter the default values for the vector and CSR assignments, the acceptable range is 60 through 774 for the vector and 160000 through 177700 for the CSR.

Subsequent TU56 controllers do not default the vector and CSR assignments. You must enter a value within the acceptable ranges for the vector and CSR assignments, as well as the number of drives.

```
* DU contr 0 [D:154,172150,,4,4]
```

Enter the interrupt vector address (the default value is 154), the CSR address (the default value is 172150), the number of DU:-type (RA60/80/81/RC25/RD51/RX50) disk drives (there is no default value for this parameter), the number of command rings (the default value is 4), and the number of response rings (the default value is 4).

The acceptable range for the number of DU:-type drives for each controller is 1 through 4(10).

An RC25 is both a fixed-media and a removable-media disk drive; therefore, each RC25 is equivalent to two units. When you specify the number of DU:-type devices, count two units for each RC25 disk drive.

It is recommended that you use extreme care if the RC25 is your system device. Because the RC25 is both a fixed-media and removable-media disk drive, it is unlike other disk drives used as system disks. For example, if you want to spin down the removable disk to replace it with another disk pack, the fixed-media disk (possibly your system disk) has to be stopped as well. Doing so could seriously disrupt system activities.

Before you replace the removable-media disk, you must ensure that all I/O activity (system and user) has stopped on the fixed media disk. Both the system and the system's users cannot access files at this time. Also, all read and write operations to the drive result in errors. For example, if you have a checkpoint file on the fixed unit and you spin down the removable unit, you must be sure that the system does not attempt to do a checkpoint read or a checkpoint write. The attempted checkpoint read results in a checkpoint read failure and the task is aborted. The attempted checkpoint write results in both error messages on the console and the checkpoint operation being terminated.

For RD51/RX50 configurations, a DU controller can accept up to 4 RD51/RX50 units; however, SYSGEN does not accept an answer of less than 3 units (one RD51 fixed media disk drive and two RX50 floppy disk drives). If you respond either 1 or 2 units, SYSGEN forces 3 units into the system.

PERIPHERAL OPTIONS (Cont.)

NOTE

An RD51/RX50 configuration requires one dedicated DU controller. No other DU devices (for example, an RA81) can be on that controller. Also, only two RD51/RX50 configurations are allowed per system.

If you do not enter the default values for the vector and CSR assignments, the acceptable range is 60 through 774 for the vector and 160000 through 177700 for the CSR.

There is no default CSR or vector address for subsequent UDA controllers; you must enter values, within the acceptable ranges, for the vector and CSR assignment as well as the number of UDA drives on that controller.

To understand the choice of a command ring size and a response ring size, carefully read through the following discussion.

The software and hardware interface between drivers and controllers is referred to as the port. The RSX-11M operating system is the host.

The port works as a set of data structures in host memory. The host and disk controller use that set of data structures.

The actual transmission of commands and responses is effected by the port through NPR transfers from and to a communication region in host memory: the port polls this region for commands; the host polls it for responses. From the viewpoint of the host, an I/O operation begins when the host deposits a command in the command queue; the operation is seen as complete when the corresponding response packet is removed by the host from the response queue.

The communications area consists of two sections:

- A header area containing interrupt identification words.
- A variable-length section containing the response and command queues, organized into rings.

Note that the more command and response rings you select, the more I/O requests the host can have outstanding to the disk controller. This potentially increases the I/O speed by taking greater advantage of the disk's optimization techniques. However, increasing the number of rings uses more of the driver's private buffer pool.

The communications area is aligned on a 16-bit word boundary. The communications area requires a minimum of 12(10) bytes of storage allocated from the device driver's private buffer pool. Additional ring entries require 4 additional bytes of storage each.

Each ring entry points to a message packet, also contained in the device driver's private buffer pool. Each response message packet requires 60(10) bytes of storage while each command message packet requires 52(10) bytes of storage.

PERIPHERAL OPTIONS (Cont.)

The acceptable range for both the number of command rings and response rings is 1 through 8(10). A value of 3 is accepted; however, SYSGEN rounds this entry to 4. A value of 5 through 7 is accepted; however, SYSGEN rounds any of these entries to 8.

The default values require a total of 484(10) bytes of storage per controller from the device driver's private buffer pool.

*** DU contr 0 unit 0. is an RA60/80/81/RC25/RD51/RX50 [D:RA81]**

This question immediately follows parameter specifications for each DU controller. You must specify the type of drive. Enter RA60, RA80, RA81, RC25, RD51, or RX50.

If you specify unit 0 as a RD51 or RX50, you can specify units 1, 2, and 3 on that controller only as either RD51s or RX50s.

If you specify unit 0 as a DU device other than the RD51 and RX50, RD51 and RX50 are excluded from your choices for units 1, 2, and 3 on that controller.

SYSGEN repeats this question for each device unit specified for each controller.

*** DX controller 0 [D:264,177170]**

Enter the interrupt vector address (the default value is 264), the CSR address (the default value is 177170), and the number of RX01 floppy disk drives (there is no default for this parameter) for the first RX11 controller.

The acceptable range for the number of RX01 floppy disk drives is 1 or 2(10).

If you do not enter the default values for the vector and CSR assignments, the acceptable range is 60 through 774 for the vector and 160000 through 177700 for the CSR.

There is no default CSR or vector address for subsequent RX11 controllers; you must enter values, within the acceptable ranges, for the vector and CSR assignments as well as the number of RX01 floppy disk drives.

*** DY controller 0 [D:264,177170]**

Enter the interrupt vector address (the default value is 264), the CSR address (the default value is 177170), and the number of RX02 floppy disk drives (there is no default for this parameter) for the first RX211/RXV21/RXV12 controller.

The acceptable range for the number of RX02 floppy disk drives is 1 or 2(10).

PERIPHERAL OPTIONS (Cont.)

If you do not enter the default values for the vector and CSR assignments, the acceptable range is 60 through 774 for the vector and 160000 through 177700 for the CSR.

There is no default CSR or vector address for subsequent RX211/RXV21/RXV12 controllers; you must enter values, within the acceptable ranges, for the vector and CSR assignments as well as the number of RX02 floppy disk drives.

*** EM controller 0 [D: ,176400]**

Enter the interrupt vector address (there is no default for the interrupt vector), the CSR address (the default address is 176400), and the number of ML11 disk drives (there is no default for this parameter).

If you do not use the default values, the acceptable ranges are as follows:

Vector	60 through 744(8)
CSR	160000 through 177700(8)
Number of ML11 drives	1 through 8(10)

*** GR controller 0 [D:,172000,,1]**

RSX-11M supports the graphics display subsystem with the following restrictions:

- One, and only one, VT11 or VS60 in the system
- The graphics display driver does not operate on any processors in 22-bit mode; memory size must be less than or equal to 124K words.
- For systems using the VT11, the display buffer of the task driving the VT11 must completely reside in the low 28K words of system memory
- The graphics display driver is always resident.

The vector address for the graphics display subsystem is assigned from the floating vector space starting at 300. Thus, there is no default vector address for the graphics display subsystem. Enter a vector address in the range 300 through 774. Consult your DIGITAL Field Service Representative if the vector address is unknown.

After you specify the vector address, enter the CSR address (the default value is 172000), whether the connected terminal is a VT11 or a VS60 (there is no default for this parameter), and the number of CRT monitors (the default is 1).

If you do not enter the default CSR address and the number of CRT monitors, the acceptable range is 160000 through 177700 for the CSR and 1 through 2 for the number of CRT monitors.

PERIPHERAL OPTIONS (Cont.)

NOTE

Only the VS60 can drive two CRT monitors independently. Thus, if your system includes the VT11, you must specify the default value of 1, for the number of CRT monitors.

* LA controller 0 [D:300,170460,0]

Enter the interrupt vector address (the default value is 300), the CSR address (the default value is 170460), and the number of UNIBUS Mapping Registers (UMRs) for the LPA11-K.

The UMR parameter applies only to UNIBUS processors with extended memory (22-bit mapping) support. Enter a value to specify the maximum number of UMRs that the LPA11-K driver can use to map all concurrently active LPA11-K I/O transfers. If the processor does not have extended memory, the default for this parameter is 0. If the processor does have extended memory, but the system does not include support for the 20K-word Executive, the default for this parameter is 4; otherwise, the default is 5. See the RSX-11M/M-PLUS I/O Drivers Reference Manual for details.

There is no default CSR or vector address for subsequent LA controllers; you must enter values within the acceptable ranges for the vector and CSR addresses as well as the number of UNIBUS mapping registers for the LPA11-K.

NOTE

The vector address is assigned from floating vector space. Consult your DIGITAL Field Service Representative if the location is unknown. Also, the required CSR address is that of the first word of the LPA11 CSR group.

If you include a LA device in your system, SYSGEN automatically includes support for the Send/Receive directive (Question 37, Code C, Executive Options Section).

See Section 4.8.1 for the IC and IS Subsystems questions and Section 4.8.2 for IP Subsystems questions.

* LP controller 0 [D:200,177514,LA180,0,300,160130]

Enter the interrupt vector address (the default value is 200), the CSR address default value is 177514) and the controller option (the default option is LA180) for the first line printer controller. Valid controller options are described in Table 4-3.

PERIPHERAL OPTIONS (Cont.)

Table 4-3
Standard Line Printer Devices

Option	Printer [1]	Column Width	Character Set	Lines per Minute
LP11-A	LP25-A	132	64	285
LP11-B	LP25-B	132	96	204
LP11-C	LP14-C	132	64	890
LP11-D	LP14-D	132	96	650
LP11-E	LP26-E	132	96	420-600
LP11-F	LP01-F	80	64	170-1110
LP11-G	LP07-G	132	96	1200
LP11-H	LP01-H	80	96	170-1110
LP11-J	LP02-J	132	64	170-1110
LP11-K	LP02-K	132	96	170-1110
LP11-R	LP04-R	132	64	1110
LP11-S	LP04-S	132	96	1110
LP11-U	LP27-U	132	96	800-1200
LP11-V	LP05-V	132	64	300
LP11-W	LP05-W	132	96	300
LP11-Y	LP06-Y	132	64	600
LP11-Z	LP06-Z	132	96	460
LN01	LN01	132	96	12 pages
LS11	LS11	132	62	60-200
LV11	LV01	132	96	500
LA180	LA180	132	96	150

1. You can connect a maximum of eight line printers to the system.

PERIPHERAL OPTIONS (Cont.)

For printer widths and speed, consult your DIGITAL Field Service Representative or the PDP-11 Peripherals Handbook.

The LP11-F and LP11-H printer options have a column width of only 00 chracters. These printer options only print the first 80 characters of a print line.

The LP11-A, -C, -F, -J, -R, -V, -Y, and LS11 printer options may not print lowercase characters. If they do not, lowercase characters are printed as spaces.

If your target system configuration includes an LP11-A, -B, -C, -D, -E, -V, -W, -Y, -Z, LS11, or LA180 printer option, but you did not specify that particular printer option, a print line may be lost (not printed) when the line printer is turned off line.

If your target system configuration includes an LP11-F, -H, -J, -K, -R, -S or LV11, but you did not specify that particular printer option, a file may take about 25 percent longer to print than if you specify the correct printer option.

If your system includes KMC line printer support, you must enter the KMC time-out count (the default of 0 excludes KMC support), the KMC interrupt vector address (the default value is 300), and the KMC CSR address (the default value is 160130).

The time-out count specifies the interval in which the KMC polls the line printer between printed lines. This value is measured in units of 50 microseconds. For example, if you enter 1, the KMC polls the line printer every 100 microseconds (as each print buffer empties). The acceptable range is 0 through 100(10). For slower printers, poll less frequently (enter a higher number); the polling interval increases or decreases UNIBUS latency.

The acceptable range for the KMC interrupt vector address is 60 through 774 and the range for the KMC CSR address is 160000 through 177700, both in octal.

NOTE

If you select KMC support, all printers must use the KMC; those that do not use the KMC cannot operate. You must respecify KMC parameters for each additional line printer controller question asked by SYSGEN.

*** LS controller 0 [D:,170400,,,0,0,0,NO]**

The clock vector address for the LPS11 controller is assigned from the floating vector space starting at 300. It is located at an offset of four (4) from the beginning of the LPS11 vector space. Thus, there is no default clock vector address for the LPS11. Enter a clock vector address in the range 300 through 774. Consult your DIGITAL Field Service Representative if the clock vector address is unknown.

PERIPHERAL OPTIONS (Cont.)

The standard CSR address for the LPS11 is 170400. Specify the address of the first word of the LPS11 CSR group (the default value is 170400). If you do not enter the default CSR address, the acceptable range is 160000 through 177700.

The next parameter is the number of A/D channels; enter a value in the range 1 through 64(10) to specify the number of A/D channels on the first LPS11 controller.

You must then enter whether or not the gain ranging option is present. If the gain ranging option is present, you must specify the polarity mask word and the bandwidth filter channel select delay (if required).

The polarity mask word specifies whether an individual channel is unipolar or bipolar; it corresponds one-to-one with the 16 possible channels. A 1-bit designates a unipolar channel and a 0-bit designates a bipolar channel. The acceptable range for the polarity mask word is 0 through 177777 (0 specifies 16 bipolar channels, 177777 specifies 16 unipolar channels).

With bandwidth filtering enabled, the LPS11 driver imposes a software delay between changing channels on the multiplexer and initiating an A/D conversion. This delay can range from 85 microseconds to 8.5 milliseconds. Consult the LPS11 documentation to determine the proper delay for your application. Note that the response must be in 100 microsecond units (for example, specify 25 to delay 2.5 milliseconds). The acceptable range is 0 through 85. Enter 0 to disable bandwidth filtering.

If your system includes the D/A option, enter the number of channels in the range 0 through 10(10). A response of 0 (the default) indicates the option is not present. The first two D/A channels correspond to the X and Y registers of the display controller. Up to eight additional D/A channels may be specified if the external D/A option is present.

The LPS11 supports a digital I/O and relay module. You must specify whether or not the option is present. If the digital I/O and relay module is present, enter D; otherwise enter No. You then enter the maximum number of samples per second. The acceptable range is 1 through 2500(10). Note that this value must be a factor of 10,000 (1, 2, 4, 5, 8, 10, 16, 20, 25, 40, 50, 80, 100, 125, 200, 250, 400, 500, 625, 1000, 1250, 2000, or 2500).

*** MF controller 0 [D:260,175400]**

Enter the interrupt vector address (the default value is 260), the CSR address (the default value is 175400), and the number of TU78 magnetic tape drives (there is no default for this parameter) for the first TM78 tape controller.

If you do not use the default values, the acceptable ranges are as follows:

Vector	60 through 774(8)
CSR	160000 through 177700(8)
Number of TU78 drives	1 through 4(10)

PERIPHERAL OPTIONS (Cont.)

Subsequent MF controllers do not have default CSR and vector assignments. You must enter the vector and CSR assignments within the acceptable range as well as the number of drives.

*** MF controller 0 unit 0 formatter [D R:0-7 D:0]**

Each MF controller supports up to eight TM78 formatters. Each TM78 formatter supports up to four units. When you specify the number of units in the preceding question, SYSGEN asks this question to determine which TM78 formatters connect to which units (drives).

This question immediately follows parameter specification for each MF controller. You must identify TM78 formatter number. The default is 0. If you do not use the default response, the acceptable range is 0 through 7(10).

SYSGEN repeats this question for each device unit specified for each controller.

*** MM controller 0 [D:224,172440]**

Enter the interrupt vector address (the default value is 224), the Command Register address (the default value is 172440), and the number of TU45, TU16, TE16, or TU77 magtape drives (there is no default for this parameter) for the first RH11 or RH70 controller.

The acceptable range for the number of tape drives is 1 through 8.

If you do not enter the default vector and CSR assignments, the acceptable range is 60 through 774 for the vector and 160000 through 177700 for the CSR.

There is no default CSR or vector address for subsequent controllers; you must enter values, within the acceptable ranges, for the vector and CSR assignments as well as the number of tape drives.

*** MM controller 0 unit 0 formatter [D R:0-7 D:0]**

Each MM controller supports up to 8 formatters. Each TM02/03 formatter supports up to 8 units (except for TU77 drives, which support up through four drives). When you specify the number of units in the preceding question, SYSGEN asks this question to determine which TM02/03 formatters connect to which units (drives).

This question immediately follows parameter specification for each MM controller. You must identify the number (the unit plug) for the TM02/03 formatter (tape controller) on the RH11 or RH70. The default is 0. If you do not use the default response, the acceptable range is 0 through 7(10) or 0 through 3(10) for TU77 drives.

PERIPHERAL OPTIONS (Cont.)

SYSGEN repeats this question for each device unit specified for each controller.

* MS controller 0 [D:224,172522]

Enter the interrupt vector address (the default value is 224) and the CSR address (the default value is 172522) for the first TS11 controller.

The CSR for the MS device is not the first register in the MS register set. The default CSR address displayed with this question is the actual CSR address for this device.

If you do not enter the default values for the vector and CSR assignments, the acceptable range is 60 through 774 for the vector and 160000 through 177700 for the CSR.

Subsequent TS11 controllers do not default the vector and CSR assignments; you must enter a value within the acceptable range.

The TS11, TSV05, and TU80 magtape drives are valid MS:-type devices.

* MT controller 0 [D:224,172522]

Enter the interrupt vector address (the default value is 224), the Command Register address (the default value is 172522), and the number of TS03, TU10, or TE10 magtape drives (there is no default for this parameter) for the first TM11, TMA11, or TMB11 controller.

The CSR for the MT device is not the first register in the MT register set. The default CSR address displayed with this question is the actual CSR address for this device.

The acceptable range for the number of tape drives is 1 through 8(10).

If you do not enter the default values for the vector and CSR assignments, the acceptable range is 60 through 774 for the vector and 160000 through 177700 for the CSR, both in octal.

There is no default command register or vector address for subsequent MT controllers; you must enter values, within the acceptable ranges, for the vector and CSR assignments as well as the number of tape drives.

* PP controller 0 [D:74,177554]

Enter the interrupt vector address (the default value is 74) and the CSR address (the default value is 177554) for the first PC11 controller.

The CSR for the PP device is not the first register in the PP register set. The default CSR address displayed with this question is the actual CSR address for this device.

PERIPHERAL OPTIONS (Cont.)

If you do not enter the default values for the vector and CSR assignments, the acceptable range is 60 through 774 for the vector and 160000 through 177700 for the CSR, both in octal.

Subsequent PC11 controllers do not default the vector and CSR assignments; you must enter values within the acceptable ranges.

*** PR controller 0 [D:70,177550]**

Enter the interrupt vector address (the default value is 70) and the CSR address (the default value is 177550) for the first PC11/PR11 controller.

If you do not enter the default values for the vector and CSR assignments, the acceptable range is 60 through 774 for the vector and 160000 through 177700 for the CSR, both in octal.

Subsequent PC11/PR11 controllers do not default vector and CSR assignments; you must enter a value within the acceptable range.

*** UD controller 0 [D:234,171776]**

Enter the interrupt vector address (the default value is 234) and the CSR address (the default value is 171776) for the UDC11 controller.

If you do not enter the default values for the vector and CSR assignments, the acceptable range is 60 through 774 for the vector and 160000 through 177700 for the CSR, both in octal.

After you specify the interrupt vector address and the CSR address for the UDC11, SYSGEN immediately prompts for UDC11 module information. For clarity, this section lists the prompt lines in numeric order, not in logical sequence. If you were performing a SYSGEN and included a UDC11 controller, the questions for UDC11 would follow the vector and CSR assignments.

The UDC11 supports up to 252(10) modules, which can be classified into seven types:

- Analog input
- Analog output
- Bi-stable output
- Digital interrupt
- Digital sense
- I/O counter
- Single-shot output

PERIPHERAL OPTIONS (Cont.)

Modules of the same type must occupy consecutive locations within the UDC11. Thus, if there are seven analog input modules and the first module starts at slot 0, then the last analog input module must be at slot 6. Module types cannot overlap, but unassigned slots are permitted.

You must enter the number of each module contained in the UDC11 and identify the first slot for that module. The permissible range for each entry is 0 through 252(10). Note, however, that SYSGEN decrements the range value for the number of each module by the total number of previously specified UDC11 modules. For example, if you specify 50 analog input modules, you are limited to 152 of the other modules (maximum 252 UDC11 modules).

SYSGEN asks the following questions to establish UDC11 module boundaries.

- UD controller 0 ADU01 analog input module
- UD controller 0 analog output module
- UD controller 0 bi-stable output module
- UD controller 0 digital interrupt module
- UD controller 0 digital sense module
- UD controller 0 I/O counter module
- UD controller 0 single-shot output module

*** XB controller 0 [D:124,172414]**

Enter the interrupt vector address (the default value is 124) and the CSR address (the default value is 172414) for the first DA11-B interface.

If you do not enter the default for the vector and CSR assignments, the acceptable range is 60 through 774 for the vector and 160000 through 177700 for the CSR, both in octal.

Subsequent DA11-B interfaces do not default the vector and CSR assignments; you must enter values within the acceptable ranges.

*** XL Controller 0 [D:,,H]**

The vector address for the DL11-E asynchronous line interface is assigned from the floating vector space starting at 300. Thus, there is no default vector address for the DL11-E. Enter a vector address in the range 300 through 774. Consult your DIGITAL Field Service Representative if the vector address is unknown.

PERIPHERAL OPTIONS (Cont.)

The CSR address for the DL11-E asynchronous line interface is assigned from the floating address space starting at 175610. Thus, there is no default CSR assignment for the DL11-E. Enter a CSR address in the range 175610 through 177700. Refer to Appendix E or consult your DIGITAL Field Service Representative if the CSR address is unknown.

The first DL11-E line defaults to a half-duplex line (H). Enter F to specify a full-duplex line.

There is no default value for the parameter that specifies the required number of synchronous characters in a synchronous leader. You must enter a value in the range 3 through 14(10). A typical response is 4 through 6. If the line is to run at high speeds or if the expected system load is to be heavy, specify a greater number of synchronous characters.

There are no default parameters for subsequent DL11-E lines; you must enter values for the vector and CSR assignments.

*** XM controller 0**

The vector address for the DMC11 interprocessor link is assigned from the floating vector space starting at 300. Thus, there is no default interrupt vector address for the DMC11. Enter a vector address in the range 300 through 774. Consult your DIGITAL Field Service Representative if the vector address is unknown.

The CSR address for the DMC11 interprocessor link is assigned from the floating address space starting at 160010. Thus, there is no default CSR assignment for the DMC11. Enter a CSR address in the range 160010 through 177700. Consult your DIGITAL Field Service Representative if the CSR address is unknown or see Appendix E.

Normally, the DMC11 is a full-duplex serial communications link. When the DMC11 is used on a half-duplex line, one end of the line must be the primary station and the other end must be the secondary station. Specify an F to indicate that the line is full-duplex, an H to indicate that the line is a secondary station half-duplex, or P to indicate that the line is a primary station half-duplex.

*** XP controller 0 [D:,174770,H]**

The vector address for the DP11 synchronous line interface is assigned from the floating vector space starting at 300. Thus, there is no default interrupt vector address for the DP11. Enter a vector address in the range 300 through 774. Consult your DIGITAL Field Service Representative if the vector address is unknown or see Appendix E.

The standard CSR assignment for the DP11 is 174770. If you do not enter the default CSR address, enter a value in the range 160000 through 177700 octal.

The first DP11 line defaults to a half-duplex line (H). Enter F to specify a full-duplex line.

PERIPHERAL OPTIONS (Cont.)

There is no default value for the parameter that specifies the required number of synchronous characters in a synchronous leader. You must enter a value in the range 3 through 14(10). A typical response is 4 through 6. If the line is to run at high speeds or if the expected system load is to be heavy, specify a greater number of synchronous characters.

Subsequent DP11 lines default only the half-duplex parameter (H); you must enter values for the vector and CSR assignments.

*** XQ controller 0 [D:,,H,E,C]**

The vector address for the DQ11 synchronous line interface is assigned from the floating vector space starting at 300. Thus, there is no default vector address for the DQ11. Enter a vector address in the range 300 through 774. Consult your DIGITAL Field Service Representative if the vector address is unknown or see Appendix E.

The CSR address for the DQ11 synchronous line interface is assigned from the floating address space starting at 160010. Thus, there is no default CSR assignment for the DQ11. Enter a CSR address in the range 160010 through 177700. Consult your DIGITAL Field Service Representative if the CSR address is unknown.

The first DQ11 line defaults to a half-duplex line (H), with an error detection expander unit (E), and a character detection expander unit (C). Enter F, NO, or NO respectively to override these defaults.

There is no default value for the parameter that specifies the required number of synchronous characters in a synchronous leader. You must enter a value in the range 3 through 14(10). A typical response is 4 through 6. If the line is to run at high speeds or if the expected system load is to be heavy, specify a greater number of synchronous characters.

Subsequent DQ11 lines do not default any of the parameters; you must enter values for the vector and CSR assignments.

*** XU controller 0 [D:,,F]**

The vector address for the DU11 synchronous line interface is assigned from the floating vector space starting at 300. Thus, there is no default interrupt vector address for the DU11. Enter a vector address in the range 300 through 774 octal. Consult your DIGITAL Field Service Representative if the vector address is unknown or see Appendix E.

The CSR address for the DU11 synchronous line interface is assigned from the floating address space starting at 160010. Thus, there is no default CSR assignment for the DU11. Enter a CSR address in the range 160010 through 177700 octal. Consult your DIGITAL Field Service Representative if the CSR address is unknown or see Appendix E.

PERIPHERAL OPTIONS (Cont.)

The first DU11 line defaults to a full-duplex line (F). Enter H to specify a half-duplex line.

There is no default value for the parameter that specifies the required number of synchronous characters in a synchronous leader. You must enter a value in the range 3 through 14(10). A typical response is 4 through 6. If the line is to run at high speeds or if the expected system load is to be heavy, specify a greater number of synchronous characters.

Subsequent DU11 lines default only the full-duplex parameter (F); you must enter values for the vector and CSR assignments.

*** XW controller 0 [D:,,H]**

The vector address for the DUP11 synchronous line interface is assigned from the floating vector space starting at 300. Thus, there is no default interrupt vector address for the DUP11. Enter a vector address in the range 300 through 774. Consult your DIGITAL Field Service Representative if the vector address is unknown or see Appendix E.

The CSR address for the DUP11 synchronous line interface is assigned from the floating address space starting at 160010. Thus, there is no default CSR assignment for the DUP11. Enter a CSR address in the range 160010 through 177700. Consult your DIGITAL Field Service Representative if the CSR address is unknown or see Appendix E.

The first DUP11 line defaults to a half-duplex line (H). Enter F to specify a full-duplex line.

There is no default for the parameter that specifies the required number of synchronous characters in a synchronous leader. You must enter a value in the range 3 through 14(10). A typical response is 4 through 6. If the line is to run at high speeds or if the expected system load is to be heavy, specify a greater number of synchronous characters.

Subsequent DUP11 lines do not default any of the parameters; you must enter values for the vector and CSR assignments.

*** YH controller 0 [D:,,,300,0,0]**

This question appears only if you specified a DH11 asynchronous line interface (YH) and have a UNIBUS processor (for example, PDP-11/24, PDP 11/44, or PDP 11/70). Note that the Loadable/Resident parameter does not appear.

Enter the interrupt vector address (no default), the CSR address (no default), the number of lines (no default), the DM11-BB interrupt vector address (no default), and the DM11-BB CSR address (no default).

PERIPHERAL OPTIONS (Cont.)

The interrupt vector address for the DH11 is assigned from floating vector space starting at location 300. Thus, there is no default vector assignment for the DH11. Enter a vector address in the range 300 through 774. Consult your DIGITAL Field Service Representative if the interrupt vector address is unknown or see Appendix E.

The CSR address for the DH11 is assigned from floating address space starting at 160010. Thus, there is no default CSR assignment for the DH11. Enter a CSR address in the range 160010 through 177700. Consult your DIGITAL Field Service Representative if the CSR address is unknown or see Appendix E.

The DH11 can service up to 16 remote and local lines. Enter the total number of lines desired by specifying the highest line number in the range 0 through 15(10) (0 indicates one line, 15 indicates 16 lines).

If your DH11 includes DM11-BB modem support, you must enter the baud rate for all DH11 remote lines. The default answer speed (baud rate) is 300. (This speed can be changed later on an individual line basis using the MCR or VMR SET /REMOTE command.) If you do not use the default response, the acceptable answer speeds (baud rates) are 50, 75, 110, 134.5, 150, 200, 300, 600, 1200, 1800, 2400, 4800, or 9600. You must also specify the DM11-BB vector and CSR assignments. The default response of 0 excludes DM11-BB modem support.

To include DM11-BB modem support, you must enter a value for the vector and CSR assignments. The DM11-BB interrupt vector address is assigned from floating vector space starting at 300. Thus, you must enter a value in the range 300 through 774 to include DM11-BB modem support. Consult your DIGITAL Field Service Representative if the interrupt vector address is unknown or see Appendix E.

The standard CSR address for the DM11-BB is 170500. If you include DM11-BB support, enter 170500 or a value within the range 160000 through 177700 for the CSR assignment.

SYSGEN repeats this question for each DH11 specified.

*** YH controller 0 [D:,,,0]**

This question appears only if you specified a DHV11 asynchronous line interface (YH) and have a Q-bus processor (for example, an LSI-11, PDP 11/03, PDP-11/23, or PDP-11/23-PLUS).

The DHV11 is the Q-bus equivalent to the UNIBUS DH11 (refer to the preceding question). Unlike the DH11, the DHV11 does not have DM11-BB modem support. Also, the DHV11 baud rates differ from those of the DH11.

Enter the interrupt vector address (no default), the CSR address (no default), the number of lines (no default), and the baud rate (the default is 0).

PERIPHERAL OPTIONS (Cont.)

The interrupt vector address for the DHV11 is assigned from floating vector space starting at location 300(octal). Thus, there is no default vector assignment for the DHV11. Enter a vector address in the range 300 through 774(octal). Consult your DIGITAL Field Service Representative if the interrupt vector address is unknown or see Appendix E.

The CSR address for the DHV11 is assigned from the floating address space starting at 160010(octal). Thus, there is no default CSR assignment for the DHV11. Enter a CSR address in the range 160010 through 177700(octal). Consult your DIGITAL Field Service Representative if the CSR address is unknown or see Appendix E.

The DHV11 can service up to 8 remote and local lines. Enter the total number of lines desired by specifying the highest line number in the range 0 through 7 (0 indicates one line, 7 indicates 8 lines).

The DHV11 can maintain a full-duplex connection through a Bell 103A-type modem. However, modem support requires additional code in the terminal driver and thus increases system overhead; select modem support only if needed. If you wish to include modem support, specify the baud rate for all DHV11 remote lines. Acceptable answer speeds (baud rates) are 75, 110, 134.5, 150, 300, 600, 1200, 1800, 2000, 2400, 4800, 9600, or 19200. This speed can be changed later on an individual line basis using the MCR or VMR SET /REMOTE command. Note that the default for this parameter (0) excludes modem support.

SYSGEN repeats this question for each DHV11 specified.

NOTE

If you include a DHV11 in your system, SYSGEN automatically includes the full-duplex terminal driver (Question 1, Option C, Terminal Driver Options Section).

*** YJ controller 0**

This question appears only if you specified a DJ11 (YJ) asynchronous line multiplexer. Note that the Loadable/Resident parameter does not appear because the DJ11 uses the same driver as the DL11 and the DH11.

The interrupt vector address for the DJ11 is assigned from floating vector space starting at 300. Thus, there is no default vector assignment for the DJ11. Enter a vector address in the range 300 through 774. Consult your DIGITAL Field Service Representative if the vector address is unknown.

The CSR address for the DJ11 is assigned from floating address space starting at 160010. Thus, there is no default CSR assignment for the DJ11. Enter a CSR address in the range 160010 through 177700. Consult your DIGITAL Field Service Representative if the CSR address is unknown or see Appendix E.

PERIPHERAL OPTIONS (Cont.)

Each DJ11 can service up to 16 asynchronous serial lines. Enter the total number of lines by specifying the highest line number in the range 0 through 15 decimal (0 indicates one line, 15 indicates 16 lines).

SYSGEN repeats this question for each DJ11 specified.

*** YL controller 0 [D:60,177560, NO]**

This question always appears; you must include at least one DL11 line interface in an RSX-11M system.

The default interrupt vector address for the first DL11 line is 60. If you do not use the default vector assignment, the acceptable range is 60 through 774.

The default CSR address for the first DL11 line is 177560. If you do not use the default CSR assignment, the acceptable range is 160000 through 177700.

If your DL11 includes modem support (that is, if you have a DL11-E or a DLV11-E), enter E; otherwise, enter No. The remote speed of the DL11 is determined by the hardware and cannot be changed using software.

If you specify more than one DL11, you must enter the vector and CSR assignment for each additional line.

Interrupt vector addresses for additional DL11 lines are assigned from the floating vector space starting at 300. There is no default vector address for any additional DL11 lines. You must enter a value within the range 300 through 774 octal. Consult your DIGITAL Field Service Representative if the interrupt vector address of additional lines is unknown or see Appendix E.

CSR addresses for additional DL11 lines are assigned from floating address space starting at 176000. There is no default CSR address for any additional DL11 lines. You must enter a value within the range 176000 through 176770 octal. Consult your DIGITAL Field Service Representative if the CSR address of additional lines is unknown or see Appendix E.

*** YZ controller 0 [D:,,,0]**

This question appears only if you specified a DZ11/DZV11 (YZ) asynchronous line multiplexer. Note that the Loadable/Resident parameter does not appear.

The interrupt vector address for the DZ11/DZV11 is assigned from floating vector space starting at 300. Thus, there is no default vector assignment for the DZ11/DZV11. Enter a vector address in the range 300 through 774 octal. Consult your DIGITAL Field Service Representative if the vector address is unknown or see Appendix E.

PERIPHERAL OPTIONS (Cont.)

The CSR address for the DZ11/DZV11 is assigned from floating address space starting at 160010. Thus, there is no default CSR assignment for the DZ11/DZV11. Enter a CSR address in the range 160010 through 177700. Consult your DIGITAL Field Service Representative if the CSR address is unknown or see Appendix E.

Each DZ11 can service up to eight asynchronous lines. Enter the total number of lines by specifying the highest line number in the range 0 through 7(10) (0 indicates one line, 7 indicates eight lines).

Each DZV11 can service up to four asynchronous lines. Enter the total number of lines by specifying the highest line number in the range 0 through 3(10) (0 indicates one line, 3 indicates four lines).

The DZ11/DZV11 can maintain a full-duplex connection through a Bell 103A-type modem. However, modem support requires additional code in the terminal driver and thus increases system overhead; select modem support only if needed. If you wish to include modem support, specify only one baud rate for all DZ11/DZV11 remote lines. Acceptable answer speeds (baud rates) are 50, 75, 110, 134.5, 150, 200, 300, 600, 1200, 1800, 2000, 2400, 3600, 4800, 7200, or 9600. This speed can be later changed on a line basis using the MCR or VMR SET /REMOTE command. Note that the default for this parameter (0) excludes modem support.

SYSGEN repeats this question for each DZ11/DZV11 specified.

4.8.1 IC and IS Subsystems

If your system includes ICS/ICR process I/O subsystems or DSS/DRS modules, SYSGEN asks the following questions. Note that UDC11 support precludes ICS/ICR support; ICS/ICR and UDC11 are mutually exclusive.

*** 1. Expanded comments for ICS/ICR questions?**

Expanded comments provide explanatory text that helps you answer the ICS/ICR questions.

*** 2. Do you want task activation from unsolicited interrupts?**

This option permits the ICS/ICR driver to initiate a task when the driver receives unsolicited input. The option provides support for tasks to link to interrupts and obtain activation data upon initiation.

*** 3. IC controller 0 vector address:**

The standard vector address for the ICS/ICR subsystem is 234. Enter a value within the range 234 through 774. Subsequent IC controllers obtain vector assignments from floating vector space starting at 300. Consult your DIGITAL Field Service Representative if the vector addresses are unknown.

PERIPHERAL OPTIONS (Cont.)

*** 4. CSR address:**

The standard CSR address for the ICS/ICR subsystem is 171776. Enter a value within the range 160000 through 177700. CSR addresses for subsequent IC controllers are assigned starting at 171766 and proceed downward in eight-byte intervals (for example, 171766, 171756, and 171746).

*** 5. Is it an ICR-11?**

Specify whether the subsystem is an ICR-11 or an ICS-11. SYSGEN repeats this query for each IC controller specified.

*** 6. Number of A/D converter modules in this ICS/ICR:**

The ICS/ICR subsystem supports up to 16 A/D converter modules, each with 8 channels. Enter a value in the range 0 through 16(10). If you enter a non-zero value, SYSGEN asks Question 7. SYSGEN Question 6 and, if applicable, Question 7, for each IC controller specified.

*** 7. A/D converter module number:**

Enter the module number in the range 0 through 15.

*** 8. Number of expansion multiplexers:**

Enter a value in the range 0 through 7.

*** 9. (<module name>) module number**

This question appears for each module you include (that is, if you enter non-zero values for Questions 12 through 19). Enter a value in the range 0 through 15.

*** 10. Restore module status on power and error recovery?**

This question appears only if the system includes a bi-stable output, D/A converter, or I/O counter module.

If you select this option, the ICS/ICR driver restores the state of all bi-stable digital outputs, analog outputs, and I/O prescalar values on power recovery and recovery from sustained serial transmission errors.

PERIPHERAL OPTIONS (Cont.)

*** 11. How many line errors are acceptable per second?**

This question appears only if you include the restore module status option (respond Yes to Question 10).

When serial line errors exceed the limit you specify in response to this question, the IC driver places the affected subsystem off line (when the line errors cease, the driver automatically places the subsystem online).

Enter a value in the range 0 through 5000.

The ICS/ICR subsystem consists of six distinct modules:

- D/A converter
- Single-shot output
- Bi-stable output
- Digital sense
- Digital interrupt
- I/O counter

SYSGEN prompts for the number of each module in your system (in Questions 12 through 17) and then asks for the module number of each (in Question 9).

*** 12. Number of D/A converter modules in this ICS/ICR:**

*** 13. Number of single-shot output modules in this ICS/ICR:**

*** 14. Number of bi-stable output modules in this ICS/ICR:**

*** 15. Number of digital sense modules in this ICS/ICR:**

*** 16. Number of digital interrupt modules in this ICS/ICR:**

*** 17. Number of I/O counter modules in this ICS/ICR:**

*** 18. Expanded comments for DSS/DRS questions?**

Expanded comments provide explanatory text that helps you answer the DSS/DRS questions.

PERIPHERAL OPTIONS (Cont.)

*** 19. Number of DRS-11 modules:**

Enter the number of DRS-11 digital output modules in the range 0 through 16. If you enter 0, SYSGEN omits Questions 20, 21, and 22.

*** 20. Restore module status on power and error recovery?**

If you select this option, the DRS driver restores the state of all 48 buffered digital output modules on power recovery and recovery from sustained transmission errors.

*** 21. DRS-11 CSR address:**

Enter a value for the CSR address in the range 160000 through 177700.

*** 22. DRS-11 vector address:**

Enter a value for the vector address in the range 300 through 774. This question appears for each individual module you specify.

*** 23. Number of DSS-11 digital input modules:**

Enter the number of DSS-11 digital input modules. Note that the total number of DRS-11 and DSS-11 modules cannot exceed 16. Thus, the acceptable range for this response is 0 through 16 minus the number of DRS-11 modules specified in Question 19. If you enter 0, SYSGEN omits Questions 24, 25, and 26.

*** 24. DSS-11 CSR address:**

Enter a value for the CSR address in the range 160000 through 177700.

*** 25. DSS-11 vector address:**

Enter a value for the vector address in the range 300 through 774. This question appears for each individual module you specify.

*** 26. Task activation from unsolicited interrupts?**

This option permits the DSS/DRS driver to initiate a task when the driver receives unsolicited input. The option provides support for tasks to link to interrupts and obtain activation data upon initiation.

PERIPHERAL OPTIONS (Cont.)

4.8.2 IP Subsystems

Included with selected questions below are associated conditional symbols which are defined only if you respond Yes to a particular question. Defined symbols are included in the file RSXMC.MAC. This file is created during SYSGEN and usually resides in SY:[11,10]. SYSGEN uses these conditional symbols during the assembly of the IP driver, including certain portions of code only if you select the support during SYSGEN. Prior to subsequent system generations, you can refer to RSXMC.MAC to determine the support that was previously included. It is important to note that SYSGEN creates a new version of RSXMC.MAC during each system generation.

If your system includes IP11/IP300 support, SYSGEN asks the following questions. Consult the IP11/IP300 documentation for details on the IP11/IP300 I/O subsystem. You are asked whether you have (or will ever have) each module type so that the code to support unused modules will not be assembled.

*** 1. Extended comments for IP112/IP302? [Y/N]:**

Expanded comments provide explanatory text that helps you answer the IP112/IP302 questions.

*** 2. Do you want a loadable IP driver? [Y/N]:**

Respond Yes to this question if you want a loadable IP driver. Refer to Question 17 for related information on the location of the power-fail block.

If you respond Yes to this question, SYSGEN generates the symbol LD$IP in RSXMC.MAC.

*** 3. Treat all controllers as one unit? [Y/N]:**

If you respond Yes, SYSGEN generates one SCB and one UCB to cover all IP11 controllers. This creates the appearance of a single, large IP11 controller with all of the I/O modules connected to it. This option results in a loss of system efficiency and also decreases the total number of A/D converters to 16.

If you respond Yes, SYSGEN generates the symbol I$$PUN in RSXMC.MAC.

If you respond No, SYSGEN generates one SCB and one UCB for each IP11 controller. Each controller must then be referenced with a different LUN. If you enter No, each controller can support 16 A/D converters, but the programmer must know on which controller a particular I/O module is as well as the module index.

PERIPHERAL OPTIONS (Cont.)

For example, conaider a PDP-11 that has two IP11 controllers. Controller No. 0 has one M6011 digital output module (16 points) and eight A014 A/D converter modules. Controller No. 1 has two M6011 modules (32 points), one M5010 digital input module (32 points), and three A014 modules. If all controllers are treated as one unit (Yes to the previous question), the driver will cause the system to respond as if there were only one controller with 48 digital output points (M6011), 32 digital input points (M5010), and 11 A/D converter modules (A014).

*** 4. Any latching digital output modules? [Y/N]:**

If you respond Yes, SYSGEN generates the symbol I$$PDO in RSXMC.MAC.

Because the IP11/IP300 device driver determines the system configuration at bootstrap or power-up time, it is not necessary to specify how many of each type of module are present.

*** 5. Any single-shot output modules? [Y/N]:**

If you respond Yes, SYSGEN generates the symbol I$$PSS in RSXMC.MAC.

*** 6. Direct output via QIO? [Y/N]:**

If you respond Yes, SYSGEN generates the symbol I$$PQO in RSXMC.MAC.

This option allows a task to output to digital or single-shot output modules without overmapping the I/O page. The option simplifies task code but increases overhead.

Note that the direct output via QIO support is not required for FORTRAN support to work. However, if present, it does not interfere with FORTRAN support.

The question appears only if you include a latching digital output module or a single-shot output module (Yes response to Questions 3 or 4).

*** 7. Any non-interrupting digital sense modules? [Y/N]:**

If you respond Yes, SYSGEN generates the symbol I$$PDS in RSXMC.MAC.

*** 8. Any interrupting digital sense modules? [Y/N]:**

If you respond Yes, SYSGEN generates the symbol I$$PDI in RSXMC.MAC.

PERIPHERAL OPTIONS (Cont.)

*** 9. Any change-of-state modules? [Y/N]:**

If you respond Yes, SYSGEN generates the symbol I$$PCO in RSXMC.MAC.

*** 10. Any counter modules? [Y/N]:**

If you respond Yes, SYSGEN generates the symbol I$$PTI in RSXMC.MAC.

*** 11. Direct input via QIO? [Y/N]:**

If you respond Yes, SYSGEN generates the symbol I$$PRD in RSXMC.MAC.

This option allows a task to perform digital input with a QIO directive rather than by mapping over the I/O page. The option simplifies task code but increases overhead.

Note that direct input via QIO is not required for FORTRAN support to work. However, if present, it will not interfere with FORTRAN support.

This question appears only if you responded Yes to one or more of Questions 6, 7, 8, or 9.

*** 12. Unsolicited interrupt support? [Y/N]:**

If you respond Yes, SYSGEN generates the symbol I$$PUI in RSXMC.MAC.

The M5011, M5012, and M5013 interrupting modules can produce unsolicited interrupts when certain input bits change state. If you select this option, the interrupts can be monitored by a task.

This question appears only if you responded Yes to Question 7 or 8.

*** 13. Event flag linkage to interrupts? [Y/N]:**

If you respond Yes, SYSGEN generates the symbol I$$PEF in RSXMC.MAC.

A task can monitor digital interrupts by linking a contiguous group of event flags to interrupting bits. If you select this option, the driver sets the corresponding event flag whenever its associated bit causes an interrupt.

*** 14. Any D/A converters? [Y/N]:**

If you respond Yes, SYSGEN generates the symbol I$$PDA in RSXMC.MAC.

PERIPHERAL OPTIONS (Cont.)

*** 15. Any A014 A/D converters? [Y/N]:**

If you respond Yes, SYSGEN generates the symbol I$$PAD in RSXMC.MAC.

*** 16. Any A020 A/D converters? [Y/N]:**

If you respond Yes, SYSGEN generates the symbol I$$P14 in RSXMC.MAC.

*** 17. How many output bytes should be saved on powerfail?**

If your response is equal to or greater than 1, SYSGEN generates the symbol I$$PPF = n in RSXMC.MAC., (where n is the number of bytes saved on powerfail)

This question appears only if the system includes one or more output modules and you included Executive support for power-fail recovery. Output modules are the M6010, M6012, and M6013 Latching Digital Output modules; the M6011 Single-Shot Output module; and the A630 D/A Converter module.

The answer to this question reserves table space in the IP11/IP300 driver (if the driver is resident) or in SYSTB.MAC (if the driver is loadable). If the answer to the question is n, (3*n) +10 bytes are reserved. In either case, this space is part of the Executive, so available pool space is correspondingly decreased.

At power-fail time, if there is not enough space in the table to save all outputs, the excess outputs will be lost and will not be restored.

The acceptable range is 0 through 3048(10).

Enter 0 (or press the RETURN key) to disable output restoration.

*** 18. IP11 controller vector [0 R:60:77 D:234]:**

Enter the interrupt vector address for the first IP11 controller. The standard vector address, and the default value, is 234. If you do not use the default assignment, the acceptable range is 60 through 774. Subsequent IP11 controllers are assigned vector addresses from floating vector space and there is no default. Enter a value within the acceptable range. Consult your DIGITAL Field Service Representative if the IP11 vector address is unknown.

*** 19. Base address [0 R:160000-177400 D:171000]:**

Note that this question requests the IP11 base address and not the CSR address. The base address is the CSR address minus 377(8).

PERIPHERAL OPTIONS (Cont.)

For the first IP11 controller, the default base address is 171000(8). For the second IP11 controller, the default base address is 171400(8).

The acceptable range for the IP11 base address is 160000 through 177400(8).

The third and subsequent IP11 controllers are assigned base addresses from floating address space and do not have default responses. Enter a value within the acceptable range.

Consult your DIGITAL Field Service Representative if the IP11 base address is unknown.

Example 4-1 Annotated Terminal Output from SYSGEN Phase I

```
  RSX-11M V4.1 BL35-A   124.K MAPPED (BASELINE)●
>RED DL1:=SY1
>RED DL1:=LB1
>MOU DL1:RSXM35
>@DL1:[1,2]STARTUP
>;* PLEASE ENTER TIME AND DATE (HR:MN DD-MMM-YY) [S]: 15:48 21-FEB-83
>TIM 15:48 21-FEB-83
>;* ENTER LINE WIDTH OF THIS TERMINAL [D D:132.]:
>SET /BUF=TI:132.
>ACS SY:/BLKS=512.
>@ <EOF>
>SET /UIC
UIC=[200,200]
>@SYSGEN●
>;
>; RSX-11M V4.1 BL35-A System Generation PHASE I -- version 2.0
>;
>; 21-FEB-83 15:48:26
>; RL01/RL02 distribution kit
>;
>;*  1. Autoconfigure the host system hardware? [Y/N]: Y
>INS $ACF.BSL
>INS $ACO
>ACF
>ACO SHOW
Processor Type:  11/23          Memory Size:  128. Kw

Options:

        Extended Instruction Set (EIS)
        Extended (22-Bit) Addressing
        Parity Memory

Name    Vector     CSR       Unit    Type       Remark
DLA      160      174400
                                0      RL02
                                1      RL02
LPA      200      177514
YLA      060      177560
DDA      300      176500
YZA      310      160100

>ACO SYSGEN
>REM ACF
>REM ACO
>;*  2. Do you want to override Autoconfigure results? [Y/N]: Y ❹
>;*  3. Do you want to inhibit execution of MCR commands (PREPGEN)? [Y/N]: Y ❶
>;*  5. Are you generating an unmapped system? [Y/N]: N
>;*  6. Use an input saved answer file? [Y/N]: N
>;*  8. Do you want a Standard Function System? [Y/N]: N
>;*  9. Name of output saved answer file [D: SYSSAVED.CMD] [S]:●
>;
>; Phase I output saved answers created in file DL0:[200,200]SYSSAVED.CMD;1
>;
>;* 15. Chain to Phase II after Phase I completes? [Y/N]: N
>;* 16. Enter device for EXCPRV disk when it is ready (ddu:) [D: DL1:] [S]: DL1:
>MOU DL1:EXCPRV
>;
>; Target configuration
>;
>;*  1. Processor Type  [D: 11/23]  [S]:
>;*  2. Does processor have a switch register? [Y/N D:N]:
>;*  3. Memory size (in K-word blocks) [D R:16.-1920. D:128.]:
>;*  4. Include support for K-series devices? [Y/N D:N]:
>;*  6. Floating point processor (FP-11) present? [Y/N D:N]:
>;*  7. Floating instruction set (FIS) present? [Y/N D:N]:
>;*  8. Extended instruction set (EIS) present? [Y/N D:Y]:
>;* 10. Line frequency:   A- 60 Hz    B- 50 Hz    [D: A] [S]:
>;* 11. KW11-Y Watchdog timer support? [Y/N D:N]:
>;* 12. Memory parity support? [Y/N D:Y]:
>;
```

(continued on next page)

Example 4-1 (Cont.) Annotated Terminal Output from SYSGEN Phase I

```
>! The response to the following question specifies the highest interrupt
>! vector.  If you respond with a value less than or equal to 400, SYSGEN
>! will assign the value associated with the highest interrupt vector
>! specified during the Peripheral Section.  Therefore, if your system
>! will include devices that are not specified during the Peripheral
>! Section and which have vectors above 400 (devices such as K-series and
>! certain communication devices), specify that value in the next question.
>!
>* 14. Highest interrupt vector [0 R:0-774 D:0]:
>!     For device configuration: '*' Prints device table, '.' Terminates inquiry
>!                               '?' Prints current configuration
>!     Enter devices and number of controllers for devices which require drivers
>!
>!     Current system configuration:
>!
>!     DD=1, DL=1, DP=1, YL=1, YZ=1
>* 15. Devices [S]: *
>!
>!    Device codes for A/D and industrial/laboratory devices:
>!
>!      AD- AD01-D A/D Converter
>!      AF- AFC11 A/D Converter
>!      AR- AR11 Laboratory Subsystem
>!      IC- ICR11/ICS11 Industrial Control Subsystem
>!      IP- IP11/IP300 Industrial Control Subsystem
>!      IS- DRS11/DSS11 Industrial Control Subsystem
>!      LA- LPA11 Laboratory Subsystem
>!      LS- LPS11 Laboratory Subsystem
>!      UD- UDC11 Universal Digital Controller
>!
>!    Device codes for Interprocessor communication devices:
>!
>!      XB- DA11-B Interprocessor Link
>!      XL- DL11-E Interprocessor Link
>!      XM- DMC11-E/DMR11 Interprocessor Link
>!      XP- DP11 Synchronous Interface
>!      XQ- DQ11 Synchronous Interface
>!      XU- DU11 Synchronous Interface
>!      XU- DUP11 Synchronous Interface
>!
>!    Device codes for unit record devices:
>!
>!      CR- CR11/CM11-E Card Reader
>!      GR- VT11/VS60 Graphics Subsystem
>!      LP- LA11/LP11/LS11/LV11/LN01 Line Printer
>!      PP- PC11 Paper Tape Punch
>!      PR- PC11/PR11 Paper Tape Punch and Reader
>!
>!    Device codes for disk devices:
>!
>!      DB- RP04/RP05/RP06 Disk Drive
>!      DD- TU58 Cartridge DECtape II
>!      DF- RF11 Fixed Head Disk Drive
>!      DK- RK03/RK05 Disk Drive
>!      DL- RL01/RL02 Disk Drive
>!      DM- RK06/RK07 Disk Drive
>!      DP- RP02/RP03 Disk Drive
>!      DR- RM02/RM03/RM05/RM80/RP07 Disk Drive
>!      DS- RS03/RS04 Fixed Head Disk Drive
>!      DT- TU56 DECtape
>!      DU- RA60/RA80/RA81/RC25/RD51/RX50 Disk Drive
>!      DX- RX01 Floppy Disk Drive
>!      DY- RX02 Floppy Disk
>!      EM- ML11 Non-Rotating Electronic Memory
>!
>!    Device codes for Magnetic tape devices:
>!
>!      CT- TU60 Cassette Tape Drive
>!      MF- TU78 Magtape Drive
>!      MM- TU16/TU45/TU77/TE16 Magtape Drive
>!      MS- TS11/TU80/TSV05 Magtape Drive
>!      MT- TU10/TE10/TS03 Magtape Drive
```

(continued on next page)

Example 4-1 (Cont.) Annotated Terminal Output from SYSGEN Phase I

```
>!
>!    Device codes for terminal interface devices:
>!
>!      YH- DH11/DHV11 Asynchronous Terminal Interface
>!      YJ- DJ11 Asynchronous Terminal Interface
>!      YL- DL11-A/-B/-C/-D/-E/-J/-W Asynchronous Terminal Interface
>!      YZ- DZ11/DZV11 Asynchronous Terminal Interface
>!
>!    Device codes for pseudo devices:
>!
>!      CO- console device
>!      NL- null device
>!
>!     Enter responses as: dev1=number controllers,dev2=number controllers, ...
>!     If a devices is specified without the number of controllers, the number
>!     of controllers defaults to 1.
>!
>!     Example: DK,DM=2,YL,NL.
>!
>* 15. Devices [S]: DU,MS,NL.●
>!
>! Processor:11/23   Memory Size:128K,Mapped   System:RSX-11M
>!
>!           Extended Instruction Set
>!           Parity Memory
>!
>! Host configuration
>!
>*  1. Is a line printer available? [Y/N]: Y
>*  3. Does the listing/map device have at least 120 columns? [Y/N]: Y
>*  4. Assembly listings device (ddu:) [D: 'NL:'] [S]:
>*  5. Map device for Executive and device drivers (ddu:) [D: DL1:] [S]:
>!
>* EOS * Do you want to: <CR>-continue R-repeat section E-exit P-pause [S]:
>!
>! Executive Options
>!
>!     Answer Y(ES) if the following support is desired
>!
>*  1. Include support for DBMS-11? [Y/N]: N
>*  2. FILES-11 ACP ? [Y/N]: Y
>*  3. RMS bucket locking (file sharing) and placement control? [Y/N]: Y
>*  4. Non-resident tasks (task loader)? [Y/N]: Y
>*  5. Loadable task loader? [Y/N]: Y
>*  6. Executive Common? [Y/N]: Y
>*  7. Memory management (PLAS) directives? [Y/N]: Y
>*  8. Send/Receive by reference directives? [Y/N]: Y
>*  9. Get mapping context directive? [Y/N]: Y
>!     Address checking support will be included
>!     I/O rundown support will be included
>* 12. Multi-user protection? [Y/N]: Y
>* 13. ANSI Magtape ACP? [Y/N]: Y
>* 14. Do you want on-line formatting (FMT) or diagnostic QIOs? [Y/N]: Y
>* 15. Loadable device drivers? [Y/N]: Y
>* 16. Should the default for all applicable drivers be loadable? [Y/N]: Y
>!     AST support will be included
>* 18. Include support for Cancel Selective Marktime? [Y/N]: Y
>* 19. Task termination and device not ready messages (TKTN)? [Y/N]: Y
>* 20. Power fail recovery? [Y/N]1 Y
>* 21. Install, request, and remove on exit? [Y/N]: Y
>* 22. Large (20K) Executive? [Y/N]: Y
>* 23. Logical device assignment? [Y/N]: Y
>* 24. Include support for error logging? [Y/N]: Y
>* 25. Do you intend to include a user-written driver? [Y/N]: N
>* 28. Disk writecheck? [Y/N]: Y
>* 29. Software write-lock? [Y/N]: Y
>* 30. Executive Debugging Tool (XDT)? [Y/N]: Y
>* 32. Include support for communications products (such as DECnet)? [Y/N]: Y
>!
>!  If you will be generating DECnet into this system, be sure you have
>!  read the section on SYSGEN requirements in the  'RSX DECnet Network
>!  Generation and Installation Guide.'
```

(continued on next page)

Example 4-1 (Cont.) Annotated Terminal Output from SYSGEN Phase I

```
>!  Several  DECnet  features  (eg. remote terminal support, IIS  task
>!  loading/upline dumping, etc.) require special  consideration during
>!  SYSGEN.
>!
>* 33. System controlled partitions? [Y/N]: Y
>* 34. Include support for the Shuffler? [Y/N]: Y
>* 35. Queue manager and queued print spooler? [Y/N]: Y
>* 36. Group global event flags? [Y/N]: Y
>!
>!     For directives:
>!
>!     * - Prints the table
>!     . - Terminates inquiry
>!     % - Gets all valid directives and terminates inquiry
>!
>* 37. Enter code for system directives [S]: *
>!
>!     A- Get partition parameters    B- Get task parameters
>!     C- Send/Receive                D- Alter priority
>!     E- Extend task                 F- Connect to interrupt vector
>!     G- Get sense switch            H- Get system time
>!     I- Stop bit                    J- Specify requested exit AST
>!     K- Parent offspring tasking    L- Parent offspring tasking with chaining
>!
>!     Enter responses as code1code2code3... (no commas) (e.g.: ABCDF.)
>!
>* 37. Enter code for system directives [S]: ABCDEFIK
>* 37. Enter code for system directives [S]: .
>!     Checkpointing support will be included
>* 38. Number of pre-allocated QIO packets [D R:0.-15. D:5.]:
>* 39. Size of data transfer vector in words [D R:0.-33. D:33.]:
>* 40. Round-robin scheduling interval in ticks [D R:0.-1000. D:5.]:
>* 41. Highest priority class for consideration [D R:1.-249. D:150.]:
>* 42. Lowest priority class for consideration [D R:1.-150. D:1.]:
>* 43. Executive level disk swapping interval [D R:0.-5000. D:30.]:
>* 44. Swapping priority [D R:1.-20. D:5.]:
>* 46. Seconds between printer not ready messages [D R:0.-255. D:30.]:
>* 48. System crash register and stack dump device CSR [O R:0-177700 D:177564]:
>* 50. Checkpointing with system checkpoint file? [Y/N]: Y
>* 51. Crash dump analysis:  A- PANIC  B- Crash Dump Analysis (CDA) [D:  B] [S]: B
>* 52. CDA output notification device CSR [O R:160000-177700 D:177564]:
>* 53. Enter CDA memory dump device mnemonic (ddu:) [S R:3-4]: DL1:
>* 54. Enter CDA memory dump device CSR [O R:160000-177700 D:174400]:
>* 56. RT-11 emulation support? [Y/N]: N
>!
>* EOS *  Do you want to: <CR>-continue R-repeat section E-exit P-pause [S]:
>!
>!
>! Terminal driver options
>!
>*  1. Terminal driver desired (A/B/C/D, * prints table) [S]: *
>!
>!     Terminal drivers:  A- Tailorable half duplex
>!                        B- Tailored half duplex (user-oriented)
>!                        C- Full duplex
>!                        D- Baseline half duplex
>!
>*  1. Terminal driver desired (A/B/C/D, * prints table) [S]: C
>*  2. Unsolicited input timeout value in seconds [D R:0.-255. D:120.]:
>!
>!     Answer Y(ES) if the following support is desired
>!
>*  6. Unsolicited input character AST? [Y/N]: Y
>!     Breakthrough write support will be included
>!     CTRL/R support will be included
>* 10. Escape sequence handling? [Y/N]: Y
>* 11. Get multiple characteristics? [Y/N]: Y
>* 12. Set multiple characteristics? [Y/N]: Y
>* 13. Get terminal driver options? [Y/N]: Y
>* 17. Read after prompt? [Y/N]: Y
>* 20. CRT rubout support? [Y/N]: Y
>* 25. Hardware unrecoverable input error notification? [Y/N]: Y
```

(continued on next page)

Example 4-1 (Cont.) Annotated Terminal Output from SYSGEN Phase I

```
>* 26. Device independent cursor positioning? [Y/N]: Y
>!
>* EOS * Do you want to: <CR>-continue R-repeat section E-exit P-pause [S]:
>!
>!
>! System Options
>!
>!
>!     Answer Y(ES) if the following support is desired
>!
>*  3. Build the PLAS resident FCS? [Y/N]: Y
>*  4. Code for FCP (A/B/C/D/E, * prints table) [D: C] [S]: *
>!
>!      The five FCP codes are:
>!
>!      A - MINIMUM:            Minimum functionality (2KW)
>!      B - SMALL:              Full functionality, heavily overlayed (2.5KW)
>!      C - MIDDLE:             Full functionality, moderately overlayed (5KW)
>!      D - LARGE:              Full functionality, non-overlayed (9KW)
>!      E - OTHER:              User supplied FCP
>!
>*  4. Code for FCP (A/B/C/D/E, * prints table) [D: C] [S]: C
>*  5. Build Post Mortem Dump (PMD)? [Y/N]: Y
>*  6. Build the Resource Monitoring Display task (RMD)? [Y/N]: Y
>*  8. Do you want DIGITAL Command Language (DCL)? [Y/N]: Y
>!     Parent offspring tasking with chaining directive support will be included
>!     Specify request exit AST directive support will be included
>*  9. Enter the number of user-written CLIs [D R:0.-13. D:0.]:
>* 10. Do you want pool monitoring and low pool recovery (PMT)? [Y/N]: Y
>* 11. What name would you like to give your system [D: RSX11M] [S R:0-6]:
>* 12.  Do you want SPM-11 support? [Y/N]: N
>!
>* EOS * Do you want to: <CR>-continue R-repeat section E-exit P-pause [S]:
>!
>!     Thinking ...
>!
>! End of Executive option generation at 15:58:38 on 21-FEB-83
>!
>! Peripheral configuration
>!
>!     Parameters appearing in square brackets '[...]' can only be
>!     specified for the first controller of a particular device.
>!     Parameters appearing in parentheses '(...)' only need be specified
>!     if the indicated option is present on the target system.
>!
>!     The default for loadable drivers has been set to *TRUE*.
>!     To override this setting enter R (resident) as the first parameter
>!     for the first controller of the specified device.
>!
>! A/D and Laboratory devices: None specified
>!
>! Interprocessor communication devices: None specified
>!
>! Unit record devices: LP
>!
>! Enter [L/R,] vector, CSR, printer option
>!              (,CR/LF timeout count <0=no KMC>, KMC vector, KMC CSR]) for:
>!
>* 16. LP controller 0 [D: 200,177514,LA1B0:0,300,160130] [S]: ,,LP11-B
>!
>! Disks: DD, DL, DU
>!
>! Enter [L/R,] vector, CSR, number of drives for:
>!
>*  3. DD controller 0 [D: 300,176500,2]            [S]:
>!
>*  3. DL controller 0 [D: 160,174400,2]            [S]:
>* 53. Contr 0 unit 0. is an RL01/RL02 [D: RL02]    [S]:
>* 53. Contr 0 unit 1. is an RL01/RL02 [D: RL02]    [S]:
>!
>! Enter [L/R,] vector, CSR, number of drives, number of command rings,
>!             number of response rings for:
```

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Example 4-1 (Cont.) Annotated Terminal Output from SYSGEN Phase I

```
>!
>* 25. DU controller 0 [D: 154,172150,,4,4]          [S]: ,,2,,
>* 60.  Contr 0 unit 0. is an RA60/80/81/RC25/RD51/RX50  [D:  RA81] [S]: RC25
>* 60.  Contr 0 unit 1. is an RA60/80/81/RC25    [D:  RA81] [S]: RC25
>!
>! Tapes: MS
>!
>! Enter [L/R,] vector, CSR for:
>!
>*  1. MS controller 0 [D: 224,172522]              [S]:
>!
>! Non-physical (pseudo) devices: CO, NL, TI, CL, LB, SY
>!
>! Terminal interface devices: YL, YZ
>!
>! Enter vector, CSR, E=DL11-E modem support/NO=no for:
>!
>* 21. YL controller 0 [D: 60,177560,NO]             [S]:
>!
>! Enter vector, CSR, highest line number <0 to 7> [, answer speed] for:
>!
>* 24. YZ controller 0 [D: 310,160100,3,300]         [S]:
>!
>* EOS * Do you want to: <CR>-continue R-repeat section E-exit P-pause [S]:
>!
>!
>! End of interrupt vector area has been set to 400
>!
>!
>! Create Executive build files
>!
>!
>*  1. Do you wish to edit any of the Executive files? [Y/N]: N
>!
>!
>* EOS * Do you want to: <CR>-continue R-repeat section E-exit P-pause [S]:
>!
>!
>!
>! Prepare for task building
>!
>!
>! Clean-up extraneous object files
>!
>!
>* EOS * Do you want to: <CR>-continue R-repeat section P-pause [S]:
>!
>! End of SYSGEN phase I at 16:09:21 on 21-FEB-83
>!      -- To continue type: @[200,200]SYSGEN2
>!
>@ <EOF>
>@SYSGEN (16)
>!
>! RSX-11M V4.1 BL35-A System Generation PHASE I -- version 2.0
>!
>! 21-FEB-83 16:09:34
>! RL01/RL02 distribution kit
>!
>*  1. Autoconfigure the host system hardware? [Y/N]: N
>*  3. Do you want to inhibit execution of MCR commands (PREPGEN)? [Y/N]: N
>*  4. Have you made a copy of the distribution kit? [Y/N]: Y
>*  5. Are you generating an unmapped system? [Y/N]: N
>*  6. Use an input saved answer file? [Y/N]: Y
>*  7. Name of input saved answer file [D: SYSSAVED.CMD] [S]:(16)
>!
>! Phase I input saved answers
>! created on 21-FEB-83 at 15:49:05
>! by SYSGEN version 2.0
>! are from file DL0:[200,200]SYSSAVED.CMD;1
>!
>*  9. Name of output saved answer file [D: DL0:[200,200]SYSSAVED.CMD] [S]:
```

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Example 4-1 (Cont.) Annotated Terminal Output from SYSGEN Phase I

```
>!
>! Phase I output saved answers created in file DL0:[200,200]SYSSAVED.CMD;2
>!
>* 10. Use saved host configuration? [Y/N]: Y
>* 11. Use saved peripheral configuration? [Y/N]: Y
>* 12. Skip end of section (EOS) breakpoints? [Y/N]: Y
>* 13. Skip end of execution (EOX) breakpoints? [Y/N]: Y
>* 14. Clean up files from previous GENs? [Y/N]: Y
>* 15. Chain to Phase II after Phase I completes? [Y/N]: N
>* 16. Enter device for EXCPRV disk when it is ready (ddu:) [D: DL1:] [S]: DL1:
>!
>MOU DL1:EXCPRV
>SET /UIC=[1,1]
>INS $PIP
>PIP [1,20]RSXBLD.CMD;*/DE/NM
>PIP [1,24]RSXBLD.CMD;*/DE/NM,TTDRVBLD;*
>PIP [1,50]SYSVMR.CMD;*/DE/NM,[1,54]SYSVMR;*
>PIP [11,20]*.OBJ;*/DE/NM,*.UDC;*,*.ICR;*,*.IDS;*,*.PCS;*
>PIP [11,24]*.OBJ;*/DE/NM,*.UDC;*,*.ICR;*,*.IDS;*,*.TTY;*,*.PCS;*
>PIP [11,10]RSXMC.MAC;*/DE/NM,ICTAB;*,[200,200]SGNPARM.CMD;*
>PIP [200,200]RSXBLD.CMD;*/DE/NM,TTDRVBLD;*
>PIP DL1:[11,20]RSXASM.CMD;*/DE/NM,RSXDRVASM;*,[12,20]MCRSETASM;*
>PIP DL1:[11,24]RSXASM.CMD;*/DE/NM,RSXDRVASM;*,[12,24]MCRSETASM;*
>PIP /FR

DL0: has 14863. blocks free, 5617. blocks used out of 20480.
Largest contiguous space = 9578. blocks
1408. file headers are free, 128. headers used out of 1536.

>SET /UIC=[11,10]
>!
>! Target configuration
>!
>! Processor:11/23   Memory Size:128K,Mapped   System:RSX-11M
>!
>!           Extended Instruction Set
>!           Parity Memory
>!
>! Host configuration
>!
>! Executive Options
>!
>!     Checkpointing support will be included
>!
>!
>! Terminal driver options
>!
>! System Options
>!
>!
>!     Parent offspring tasking with chaining directive support will be included
>!     Specify request exit AST directive support will be included
>!
>!     Thinking ...
>!
>! End of Executive option generation at 16:14:02 on 21-FEB-83
>!
>! Peripheral configuration
>!
>!     Parameters appearing in square brackets '[...]' can only be
>!     specified for the first controller of a particular device.
>!     Parameters appearing in parentheses '(...)' only need be specified
>!     if the indicated option is present on the target system.
>!
>!     The default for loadable drivers has been set to *TRUE*.
>!     To override this setting enter R (resident) as the first parameter
>!     for the first controller of the specified device.
>!
>! A/D and Laboratory devices: None specified
>!
>! Interprocessor communication devices: None specified
>!
```

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Example 4-1 (Cont.) Annotated Terminal Output from SYSGEN Phase I

```
>! Unit record devices: LP
>!
>! Disks: DD, DL, DU
>!
>! Tapes: MB
>!
>! Non-physical (pseudo) devices: CO, NL, TI, CL, LB, SY
>!
>! Terminal interface devices: YL, YZ
>!
>SET /UIC=[1,24] ! Creating TTDRVBLD.CMD
>SET /UIC=[11,10]
>! End of interrupt vector area has been set to 400
>!
>!
>! Create Executive build files
>!
>PIP RSXMC.MAC=DL1:RSXMC0.MAC/AP
>INS $MAC
>ASN SY:=LB:
>!
>! Start of Executive assembly at 16:22:06 on 21-FEB-83
>!
>SET /UIC=[11,24]
>MAC @DL1:RSXASM
>!
>! End of Executive assembly at 16:52:10 on 21-FEB-83
>!
>!
>! Start of MCR (subset) assembly at 16:52:11 on 21-FEB-83
>!
>SET /UIC=[12,24]
>MAC @DL1:MCRSETASM
>!
>! End of MCR (subset) assembly at 16:58:08 on 21-FEB-83
>!
>!
>!
>! Start of device drivers assembly at 16:58:08 on 21-FEB-83
>!
>SET /UIC=[11,24]
>MAC @DL1:RSXDRVASM
>!
>! End of Device drivers assembly at 17:18:37 on 21-FEB-83
>!
>ASN =LB:
>!
>! Prepare for task building
>!
>SET /UIC=[1,24]
>PIP RSX11M.OBS=[11,24]*.OBJ
>PIP TTDRV.OBJ=[11,24]*.TTY
>INS $LBR
>LBR RSX11M/CR:100.:1010.:128.=RSX11M.OBS
>LBR TTDRV/CR:30.:256.:64.=TTDRV
>PIP /NV=[11,10]RSXBLD.CMD
>PIP [11,10]RSXBLD.CMD;*/DE/NM
>REM LBR
>!
>! Clean-up extraneous object files
>!
>PIP RSX11M.OBS;*/DE/NM,TTDRV.OBJ;*,[11,24]*.OBJ;*,*.TTY;*
>REM MAC
>DMO DL1:EXCPRV
DMO -- TT0:     dismounted from DL1:
DMO -- TT0:     dismounted from DL1:     *** Final dismount initiated ***
17:25:57  *** DL1: -- Disaount complete
```

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Example 4-1 (Cont.) Annotated Terminal Output from SYSGEN Phase I

```
>REM PIP
>!
>! End of SYSGEN phase I at 17:25:57 on 21-FEB-83
>!      -- To continue type: @[200,200]SYSGEN2
>!
>SET /UIC=[200,200]
>@ <EOF>
>
```

Notes for the terminal output from SYSGEN Phase I (for a mapped target system) while running on a baseline system:

❶ Hardware bootstrap the baseline system.

❷ Invoke SYSGEN and begin answering Phase I questions.

❸ Answer Yes if you autoconfigured your system and you want to modify Autoconfigure's results. SYSGEN will ask you all the questions in Phase I, but it will use Autoconfigure's results as the defaults.

❹ Answer Yes if you to want to do a PREPGEN first.

❺ In this example, pressing the RETURN key as the response to Question 9 selects the default output saved answer file named SYSSAVED.CMD.

❻ When you enter an asterisk (*) as a response to Question 15 in the Target Configuration Section, SYSGEN displays a table of RSX-11M devices.

❼ Select the devices and the number of device controllers for your target system. You can display the current system configuration by entering a question mark (?) before terminating your input with a period (.).

If you make several corrections while specifying the devices for your target system, entering the question mark shows you the current status of your input. This feature can help you to avoid making errors in your final response.

❽ When you enter an asterisk (*) as a response to Question 37 in the Executive Options Section, SYSGEN displays a list of the system directives.

❾ Specify the system directives you want for your target system and terminate your input with a period (.).

❿ When you enter an asterisk (*) as a response to Question 1 in the Terminal Driver Options Section, SYSGEN displays the four types of terminal drivers.

⓫ Enter one type of terminal driver. In this example, the target system will have the full-duplex terminal driver (C).

⓬ When you enter an asterisk (*) as a response to Question 4 in the System Options Section, SYSGEN displays the five FCP options.

⓭ Enter one type of FCP. In this example, the target system will have the default FCP for mapped systems (C).

⓮ In the Peripheral Options Section, SYSGEN displays a comment line before each question for each selected device. The comment line contains the various fields that specify the type and order of the information for you to input. (See Section 3.3 for more information.)

⓯ This is an example of how you can include default values in your response to Peripheral Options questions. The commas (,,) in the response ",,LP11-B" for Question 16 indicate that the default vector and CSR addresses were selected with the LP11-B.

⑯ When the PREPGEN finishes and you are ready to perform your SYSGEN, invoke SYSGEN Phase I again and use the saved answer file created by the PREPGEN.

⑰ After all Phase I questions have been answered, SYSGEN creates the prefix file RSXMC.MAC. SYSGEN uses RSXMC.MAC in the Executive and device driver assemblies.

The remainder of Phase I involves the assembly of the Executive, a subset of MCR, and device drivers. Depending on the host system processor and the options you selected, this process takes from one to two hours. This is your opportunity to take a break. If you directed SYSGEN to pause at EOX breakpoints, you should check back every half hour or so to answer EOX breakpoint questions at the end of the assemblies.

CHAPTER 5

DETAILS OF SYSGEN PHASE II

Phase II is the task-building phase of the system generation procedure. During Phase II, SYSGEN task-builds the Executive and any resident device drivers. It also creates the system image file RSX11M.SYS and task-builds loadable device drivers and privileged tasks, such as MCR. Example 5-1 (at the end of this chapter) is an annotated terminal output from SYSGEN Phase II.

During this phase, SYSGEN creates the Indirect command file SYSVMR.CMD. This file contains Virtual Monitor Console Routine (VMR) commands that, upon execution, create partitions, load device drivers, and install tasks in the system image file RSX11M.SYS. Toward the end of Phase II, SYSGEN allows you to edit SYSVMR.CMD to modify partition base addresses, install additional tasks, or make other changes. Then, if you are running SYSGEN on a stand-alone system, SYSGEN invokes SYSVMR.CMD.

If you are generating your system from an on-line host system, you should note the following two items. First, SYSGEN does not invoke VMR. You have to invoke VMR after SYSGEN completes Phase II. (See Section 5.6.1). Second, SYSGEN always invokes the Version 4.1 Task Builder (TKB) to task-build its files. The V4.1 TKB is installed as task ...TKL. This permits you to still use the current system's TKB while the on-line SYSGEN is in progress.

SYSGEN uses the following files as input to Phase II:

RSXBLD.CMD is the Executive build file. This file directs the Task Builder in constructing the user-tailored Executive and the resident device drivers. This file also task-builds the loadable task loader and the Executive commons if you selected either option during Phase I. SYSGEN creates RSXBLD.CMD during Phase I (based on your responses).

RSX11M.OLB is the Executive object library file. This file contains the Executive modules, standard driver modules, and any user-written drivers. SYSGEN uses this library to task-build the Executive (including any resident drivers) and any loadable drivers.

SGNPARM.CMD is a parameter file containing Indirect symbol definitions. SYSGEN creates SGNPARM.CMD during Phase I based on your responses to the questions.

TTDRVBLD.CMD directs the Task Builder in constructing the full duplex terminal driver. SYSGEN uses TTDRV.OLB as input from Phase I to construct the object library for the full duplex terminal driver.

However, SYSGEN only inputs these files to Phase II if you selected the full-duplex terminal driver in Phase I. If you specified a resident half-duplex terminal driver, SYSGEN treats it as any other resident driver in RSXBLD.CMD. If you specified a loadable half-duplex terminal driver, SYSGEN creates the necessary task build file during Phase II.

Phase II, like Phase I, is organized in logical sections. However, not all of the sections for Phase II require that you answer questions (except for EOX breakpoints). For some sections, like the System Image Creation Section, the processing does not require user input. The section headings appear on your terminal, however, to show the distinct logical parts of SYSGEN Phase II. They also serve to allow you to see how far processing has progressed. The section headings for Phase II follow below. Those sections not requiring user input are enclosed in parentheses, and are not discussed.

- Setup Section
- (Library Build Section)
- Executive Task-Build Section
- (System Image Creation Section)
- (Full-Duplex Terminal Driver Task-Build Section)
- Loadable Driver Task-Build Section
- Common Block Task-Build Section
- Privileged Task-Build Section
- System VMR Section

5.1 PREPARING FOR PHASE II

Before beginning Phase II of SYSGEN, make sure you have done the following:

- If you generate your system from an on-line V4.1 host system, set your UIC to [200,200], assign the logical device SY: to your baseline disk, and invoke SYSGEN2.CMD as follows:

```
>SET /UIC=[200,200]
>ASN ddu:=SY: (where ddu: is the baseline disk, RSXM35)
>MOU ddu:RSXM35
>@SYSGEN2
```

- If you generate your system from a stand-alone host system, bootstrap the baseline system (see Section 4.1) then invoke SYSGEN2.CMD as follows:

```
>@SYSGEN2
```

Figure 5-1 shows the processing steps that take place during SYSGEN Phase II.

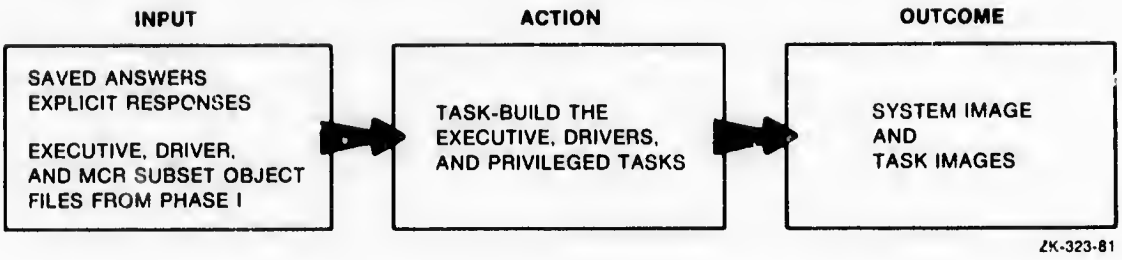

Figure 5-1 Logical Flow of SYSGEN Phase II

SETUP

5.2 SETUP SECTION

*** 1. In what UIC is SGNPARM.CMD if not <uic> ? [S]:**

Enter the UIC containing the file SGNPARM.CMD. SYSGEN replaces <uic> with the UIC from which you invoked Phase II of SYSGEN. SYSGEN creates SGNPARM.CMD during Phase I, and in the same UIC from which you invoked Phase I. Enter a different UIC to override this default, otherwise, press the RETURN key. If you followed the instructions in Section 4.1, your UIC is [200,200].

SGNPARM.CMD supplies Indirect symbol definitions from Phase I that are relevant to Phase II processing and provides a means of communicating between Phase I and the other phases of SYSGEN. SYSGEN creates this file in the UIC corresponding to the UIC from which you invoked Phase I of SYSGEN.

If you are chaining to Phase II the response to this question defaults to the UIC from which you invoked Phase I and this question does not appear.

*** 2. Do you want to inhibit execution of MCR commands (PREPGEN)? [Y/N]:**

This option allows you to perform the logical SYSGEN procedure and create a saved answer file that you can use as input to SYSGEN later when you actually generate your system.

If you respond Yes to this option, SYSGEN displays the questions and creates a saved answer file of your responses. However, SYSGEN does not process any MCR commands (such as PIP and TKB) as it normally would, and, therefore, does not create your system.

When you perform a PREPGEN in Phase II, SYSGEN:

- Does not make logical device assignments
- Does not task-build files
- Does not task-build libraries
- Does not create privileged task-build .CMD or .ODL files
- Does not create loadable driver task-build .CMD files
- Does not create SYSVMR.CMD
- Does not invoke an editor for modifying files

When you perform a PREPGEN, SYSGEN does create a saved answer file.

If you respond Yes and if you are using an RL01/02 distribution kit, SYSGEN will mount the Executive source disk after you enter the drive containing this disk (Question 7). The Executive source disk in the RL01/02 kit is EXCPRV.

SETUP (Cont.)

If you respond No to this question, SYSGEN executes all MCR commands and generates an RSX-11M system.

If you are chaining to Phase II, the response to this question defaults to the response given for Question 3 in the Setup Section for Phase I. In this case, the question does not appear.

*** 3. Use an input saved answer file? [Y/N]:**

If you have previously created a saved answer file, this option lets you direct SYSGEN to use that file as input responses to the Phase II questions. Any SYSGEN question that is automatically answered by a saved answer file does not appear on your terminal. SYSGEN does not save responses to questions concerning the task-building of LPA initialization code.

Enter a response of Yes to this question if you intend to use a saved answer file for input. If you selected the Standard Function System (see Section 3.6.2) and did not direct SYSGEN to chain directly to Phase II (Question 16 in the Phase I Setup Section), respond Yes to this question. If you are using an input saved answer file, SYSGEN asks for the name of that file in Question 4.

If you directed SYSGEN to chain directly to Phase II, the default response to this question is the same as the response given for Question 6 in the Phase I Setup Section. In this case, this question does not appear.

*** 4. Name of input saved answer file [D: <default>]:**

SYSGEN displays this question only if you responded Yes to Question 3. If the saved answer file used as input for Phase I exists SYSGEN uses that file name as the default response for this question. If you selected the Standard Function System in Phase I, the default input saved answer file is SGNSTAND.CMD. Otherwise, there is no default response.

If you have previously created a saved answer file having a file name different from the default response, you may enter the name of that file.

If the specified file does not exist, SYSGEN repeats Question 3.

If you enter a response other than the default and omit a file type, SYSGEN assumes the file type .CMD.

If you are chaining to Phase II, the response to this question defaults to the response given for Question 7 in the Setup Section in Phase I. In this case, the question does not appear.

SETUP (Cont.)

*** 5. Name of output saved answer file [D: <default>] :**

SYSGEN saves your responses to Phase II questions in an output saved answer file. This question allows you to name that file.

The default name of the output saved answer file is the same as the response given for Question 9 of the Setup Section in Phase I.

Likewise, if you are chaining to Phase II, the response to this question defaults to the response given for Question 5 in the Setup Section of Phase I. In these cases the question does not appear.

If the name of the output saved answer file for Phase II is the same as the name of the output saved answer file from Phase I, SYSGEN does not create a new output saved answer file but appends your Phase II responses to the existing saved answer file.

If you enter a response other than the default and omit a file type, SYSGEN assumes the file type .CMD.

*** 6. Skip end-of-execution (EOX) breakpoints? [Y/N]:**

End-of-execution (EOX) breakpoints occur after every section in Phase II except for the system VMR section.

When SYSGEN stops at EOX breakpoints, you can verify that no errors have occurred during the preceding operation. If you are confident that no errors will occur during execution, answer Yes to this question and SYSGEN proceeds directly to subsequent sections without stopping.

This question only appears if you are doing an actual SYSGEN (for example, you answered No to Question 3 in Phase I), and if you specified that you are using an input saved answer file (for example, you answered Yes to Question 7 in Phase I).

If you are chaining to Phase II and did not direct SYSGEN to inhibit MCR commands, the response to this question defaults to the response given for Question 13 in the Setup Section of Phase I. In this case, the question does not appear.

*** 7. Enter device for EXCPRV disk when it is ready (ddu:)[D: default] [S]:**

To answer this question, enter the device mnemonic of the drive that holds the privileged object files disk. The default response is the mnemonic of the device specified in response to Question 16 in the Phase I Setup Section (the device containing the Executive source files).

SETUP (Cont.)

This question appears only if you are using an RL01/RL02 distribution kit.

If you are chaining to Phase II from Phase I using an RL01/RL02 distribution kit, this question does not appear. Since the device used in Phase I for the Executive and driver sources is currently mounted and contains the files needed for Phase II, the response defaults to that given for Question 16 in the Setup Section for Phase I.

EXECUTABLE TASK-BUILD

5.3 EXECUTIVE TASK-BUILD SECTION

*** 1. List Executive map? [Y/N]:**

The Executive map lists the Executive global symbols and their locations in memory. These locations are used to lay out partitions. If you are generating a mapped system, the map is probably not necessary. If you are generating an unmapped system, the map is necessary for you to know where to start setting up your system partitions.

If you respond Yes, SYSGEN prints or spools the map on the line printer (if the system includes one) or terminal.

If you are generating an unmapped system, you must establish the locations for the system partitions. Look at the Executive map for the symbol $SYTOP. The value of $SYTOP indicates the last address allocated to the Executive. Partitions may start on any 32-word boundary beyond this address.

Following the Executive task-build, SYSGEN displays a table (on the terminal) that contains information on the default size and base address of the system partitions. The information in this table, together with the value of $SYTOP, may assist you in establishing partitions.

SYSGEN calculates the partition base addresses on the assumption that $SYTOP does not exceed 40000(8). You can specify a base address other than the default base address in the Privileged Task-Build Section.

NOTE

SYSGEN only lists RSX11M.MAP. If you selected the Executive commons, SYSGEN does not list the Executive commons maps (EXCOM1.MAP and EXCOM2.MAP) and the loadable task loader map (LDR.MAP).

LOADABLE DRIVER TASK-BUILD

5.4 LOADABLE DRIVER TASK-BUILD SECTION

This section provides details for SYSGEN processing of loadable driver task-build command files.

The file SGNBLDDRV.CMD controls the task-building of loadable drivers and also permits incorporation of loadable user-written drivers.

SYSGEN invokes this command file during Phase II when your system includes loadable drivers or if you specified that you wish to include a user-written driver. Note that SGNBLDDRV.CMD can be invoked directly from MCR (outside SYSGEN) to aid in task-building (or re-task-building) drivers.

If you invoke SGNBLDDRV.CMD outside of SYSGEN, you must answer Questions 1, 2, and 3. If SYSGEN invokes SGNBLDDRV.CMD, these first three questions do not appear.

*** 1. In what UIC is SGNPARM.CMD if not <uic> ? [S]:**

Enter the UIC containing the file SGNPARM.CMD. SYSGEN replaces <uic> with the UIC from which you invoked SGNBLDDRV.CMD. Enter a different UIC to override this default, otherwise, press the RETURN key.

SGNPARM.CMD supplies Indirect symbol definitions from Phase I that are relevant to Phase II processing. It provides a means of communicating between Phase I and the other phases of SYSGEN. SYSGEN creates this file in the UIC corresponding to the UIC from which you invoked Phase I of SYSGEN.

*** 2. Enter device for <label> disk when it is ready (ddu:) [D: <default>] [S]:**

To answer this question, enter the device mnemonic and unit number of the drive containing the object files disk requested. (SYSGEN replaces <label> with the volume name of the appropriate disk.)

This question appears only if you are using an RL01/RL02 distribution kit.

If you are using an RL01/02 distribution kit, SYSGEN replaces <label> with EXCPRV.

The default response (<default>) is the response entered for Question 16 (the Executive source disk) of the Setup Section in Phase I.

*** 3. Enter map device (ddu:) [D: NL:]:**

Map listings are usually of little use if your target system is mapped. The map listings are more useful if your target system is unmapped and you need to determine the size of your tasks.

LOADABLE DRIVER TASK-BUILD (Cont.)

If you want the maps, specify the desired output device as your response. If you specify a device other than LP:, SY:, LB:, TI:, TT:, or NL:, the device must be mounted (using the MCR MOUNT command) and the UFD [1,34] for mapped systems or [1,30] for unmapped systems must exist on the volume.

The default output device for the task maps is NL: (the null device).

*** 4. Build all selected loadable drivers into DRVPAR? [Y/N]:**

This question appears for mapped systems only. Normally, all loadable drivers in a mapped system are built to run in partition DRVPAR.

If you enter Yes, SYSGEN builds all the loadable drivers you selected in Phase I for partition DRVPAR.

If you enter No, SYSGEN prompts for the drivers you want to build by asking Question 5 of this section.

*** 5. Driver 2-character device mnemonic [S]:**

To answer this question, enter a 2-character device mnemonic for any loadable driver (including user-written drivers) you want to build. Enter only one device mnemonic each time this question appears. After each response to this question, SYSGEN asks Question 6. Answer Question 6 by entering the partition name into which you wish to build each driver. If your target system is unmapped, SYSGEN also asks for the base address of each partition name in Question 7.

This sequence of two or three questions (three if your target system is unmapped) appears for each loadable driver you want to build. When you have entered all the driver names you intend to include in your target system (and the appropriate partition information), press the RETURN key the next time Question 5 appears. SYSGEN then proceeds to the Privileged Task-Build Section if SGNBLDDRV.CMD was invoked during SYSGEN Phase II. If SGNBLDDRV.CMD was invoked outside SYSGEN, it exits at this point.

If you are generating an unmapped system, you should successively task-build each of the loadable drivers twice. For example, in the first pass, you might task-build the DB, DK, DL, and TT drivers. In the second pass, task-build them again.

In the first pass, task-build the drivers using a temporary base address for the driver partition (see Question 7). The temporary partition base address should be less than 28K and should begin on a 32-word boundary.

After all the drivers are successfully built the first time (up through Question 7), exit from Phase II.

For the second pass, invoke Phase II again to look at the driver maps (Question 3) to determine the size (length) of each driver and then to task-build them again. When you reinvoke Phase II, you should not use an input saved answer file (Setup Section, Question 3).

LOADABLE DRIVER TASK-BUILD (Cont.)

You can determine the size of a driver by locating the line "Task address limits:" on the driver map and subtracting the first number in the line from the second number in the line. Then round the result up to the nearest 64(10) or 100(8) number.

Using the size of each loadable driver, with information in your terminal output that follows the Executive task-build you can establish the placement of each loadable driver partition. Once you have made these calculations, begin your second pass at task-building the same drivers using the correct partition base address.

NOTE

TT is the mnemonic of the terminal interfaces (YH, YJ, YL, and YZ).

If you selected the full-duplex terminal driver in Phase I, the full-duplex terminal driver has already been task-built. Do not enter the full-duplex terminal driver as part of your response to this question.

This question appears if your target system is unmapped, if you have a mapped target system in which all drivers are not to be built for DRVPAR (that is, if you answered No to Question 4 in this section), or if your target system includes any loadable user-written drivers.

*** 6. Driver partition name [D: <dev>PAR] [S]:**

The default partition for mapped systems is DRVPAR.

The default partition for unmapped systems is <dev>PAR where <dev> is the 2-character device mnemonic specified in Question 5.

For unmapped systems, consider building the system disk driver for the partition that corresponds to the two-character device mnemonic (for example, DBPAR for RP04/05/06). This is also recommended for other drivers that should run in their own partition (for example, TTPAR). A suggested partition name for less frequently used drivers is DRVPAR. You can load a driver as you need it (after unloading the driver that currently occupies the DRVPAR partition).

*** 7. <dev>PAR's partition base address in 32-word blocks [S]:**

This question appears for unmapped systems only.

Enter the base address of the specified partition.

The base address is required during the dynamic creation of the driver task-build command files. The base address of the partition must start on a 32-word boundary.

PRIVILEGED TASK-BUILD

5.5 PRIVILEGED TASK-BUILD SECTION

*** 1. Map device for privileged tasks (ddu:) [D:NL:]**

Usually, these maps are of little use if your target system is mapped. The default response directs the maps to the null device. The maps are more useful if your target system is unmapped and you need to determine the exact size of the tasks.

If you want the maps, enter a device specification. Note that if you enter other than LP:, SY:, LB:, TI:, TT:, or NL:, the device must be mounted (using the MCR MOUNT command) and a UFD entry of [1,30] for unmapped systems or [1,34] for mapped systems must exist on the volume.

*** 2. GEN's base address in 32-word blocks [0 D:400]:**

This question appears only for unmapped systems.

The partition base address of GEN is necessary during the dynamic creation of task-build .CMD files for those RSX-11M tasks built to run in GEN. SYSGEN uses GEN's partition base address in the dynamically created command file SYSVMR.CMD.

The base address of GEN starts on a 32(10) word boundary.

The default of 400 is based on the assumption that the highest location in memory allocated to the Executive does not exceed 40000, and that you intend to use the nonprivileged baseline tasks as they were built (that is, to run in the GEN partition starting at location 40000).

If you intend to include nonprivileged, DIGITAL-supplied RSX-11M tasks in your target system you must task-build those tasks during Phase III.

*** 3. SYSPAR's base address in 32-word blocks [0 D:<default>]:**

This question appears only for unmapped systems.

The partition base address of SYSPAR is necessary during the dynamic creation of task-build .CMD files for those RSX-11M tasks built to run in SYSPAR. SYSGEN also uses SYSPAR's base address in the dynamically created command file SYSVMR.CMD.

If the target system has 24K words or more of memory, the default (<default>) is 1300. This default is based on the assumption that you selected the default of 400 32-word blocks for the GEN partition, and that you plan to include a 14K task partition (PAR14K) of which GEN is an 8K subpartition.

PRIVILEGED TASK-BUILD (Cont.)

If the target system has less than 24K words of memory the default is 1000. This default is based on the assumption that you have selected the default of 400 32-word blocks for the GEN partition, and that GEN is an 8K partition.

The base address of SYSPAR starts on a 32(10) word boundary.

*** 4. SPLPAR's base address in 32-word blocks [0 D:1300]**

This question appears for unmapped systems only, and only if you selected the serial despooler (Question 7 in the System Options Section of Phase I).

The partition base address of SPLPAR is necessary during the dynamic creation of PRTBLD.CMD. SYSGEN uses SPLPAR's base address in the dynamically created command file SYSVMR.CMD.

The base address of SPLPAR starts on a 32(10) word boundary. If you selected FCPMIN, the default response for this question can be calculated by adding 100 to the default base address of SYSPAR.

If you selected FCPSML, the default response for this question can be calculated by adding 120 to the default of Question 3 above.

*** 5. Pause to edit any task build .CMD or .ODL files? [Y/N]:**

If you answer Yes to this question, SYSGEN pauses to allow you to selectively edit the task-build .CMD or .ODL files. This is the logical place in SYSGEN to alter any task-build parameters for tasks built during Phase II, if you need to do so. If you choose to edit any .CMD files, the information you require to edit a given file is contained in comments within that file.

*** 6. Delete task-build .CMD and .ODL files after task-building? [Y/N]:**

It is usually not necessary to keep the .CMD and .ODL files after they have been used to build their respective tasks. They can be easily recreated by reinvoking SYSGEN3.CMD. You can free the disk space occupied by these files by answering Yes to this question.

SYSTEM VMR

5.6 SYSTEM VMR SECTION

*** 1. Edit SYSVMR.CMD? [Y/N]:**

This question permits you to edit the SYSVMR.CMD file.

SYSGEN defaults all terminal lines to 110 baud (unknown terminal type and lowercase input disabled). Even if modem support is included, all the lines are local and autobaud detection is disabled. These parameters can be changed to suit your particular configuration by answering Yes when SYSGEN asks if you want to edit SYSVMR.CMD.

Include in SYSVMR the appropriate commands, such as SET /REMOTE=TT3:300 or SET /VT100=TT5:, as desired. This ensures that your terminal lines are set properly when the system is booted. These commands may be entered directly to VMR at any time after SYSGEN. They may also be entered to MCR. However, in that case, their action is lost the next time you bootstrap the system.

NOTE

VMR may output several diagnostic (*DIAG*) messages during its operation. Diagnostic messages may be ignored. (See Example 5-1 at the end of this chapter for sample messages.)

SYSGEN Phase II creates the file SYSVMR.CMD to create the partition structure, install tasks and commons, and load loadable drivers. These actions prepare the system image file, created during Phase II, for actual execution.

For mapped systems, it is not usually necessary to edit this file; although, without editing, it may not produce an optimal system on small configurations. SYSVMR.CMD typically produces a valid mapped system image. Figure 5-2 depicts a mapped system partition structure that results from executing SYSVMR.CMD.

For mapped systems, SYSVMR:

- Extends pool space to the maximum size of the Executive (either 16K or 20K). If you do not want to use the maximum amount of pool, edit SYSVMR.CMD; locate the line SET /POOL= * and change the asterisk (*) to the specific desired value. See the SET /POOL command in Chapter 10 on VMR commands in the RSX-11M/M-PLUS System Mangement Guide.
- If you selected the loadable loader, creates the partition LDRPAR and installs and fixes the loader in it.

SYSTEM VMR (Cont.)

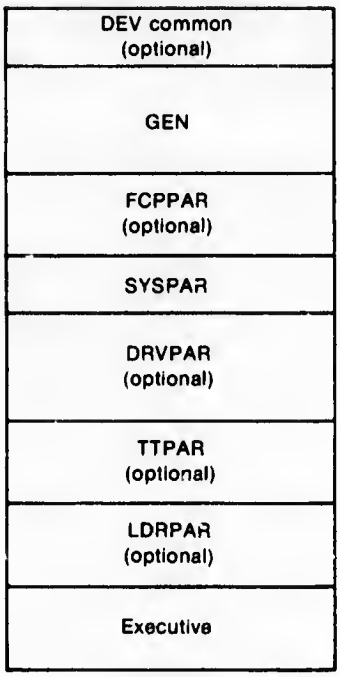

Figure 5-2 Partition Structure on Mapped Systems

- If you selected support for the Executive commons in Phase I, establishes them in the system image in the following sequence:

  1. A 4K partition called EXCOM1 is created.

  2. The first Executive common, EXCOM1.TSK, is installed in that partition. As the common is installed, the EXCOM1 partition is automatically reduced in size to match the size of EXCOM1.TSK.

  3. A 4K partition called EXCOM2 is created.

  4. EXCOM2.TSK is installed in that partition. As the common is installed, EXCOM2 is automatically reduced in size to match the size of EXCOM2.TSK.

- If you selected the full-duplex terminal driver, creates partition TTPAR and loads the terminal driver into it. By default, SYSGEN sets the size of TTPAR to 8K words, but it can usually be made smaller.

SYSTEM VMR (Cont.)

TTPAR contains code plus a private buffer pool, which is allocated in 20-word blocks for type-ahead buffers, UCB extensions, and I/O buffers. Since the number of I/O buffers required depends upon both system activity and the length of the I/O requests, an exact sizing guideline cannot be given. However, a rough algorithm for determining the size of TTPAR is:

$$P = C + (20 * T) + (60 * A)$$

where:

P is the size of TTPAR in decimal words

C is the code size of the driver (from the line "TASK IMAGE SIZE" in [11,34] TTDRV.MAP)

T is the number of terminals in the system

A is the average number of I/O requests pending at any given time

- If you selected loadable drivers, creates partition DRVPAR and loads all loadable drivers built during Phase II into it. If you do not want to load all drivers, edit SYSVMR.CMD and delete the LOAD command for each driver you wish to exclude.

NOTE

SYSGEN uses wildcards (*) to create DRVPAR's size as the sum total of all drivers loaded during the execution of SYSVMR.CMD. If you wish to allow space for other drivers, edit the partition statement and specify sufficient space. (You need the driver maps to determine what size DRVPAR should be.)

Rather than delete command lines that load drivers that you do not need, it is suggested that you insert a semicolon (;) at the beginning of the line. (VMR treats such lines as comments.)

- Creates partition SYSPAR and, if you selected FCPMIN or FCPSML, installs the respective FCP into it. The length of SYSPAR is 10100 bytes for a system with FCPMIN and 120000 bytes for a system with FCPSML. The length of SYSPAR for nonmultiuser systems with full-duplex terminal driver support is 11700 bytes. The length of SYSPAR for all other cases is 10100 bytes.

- If you selected an FCP other than FCPMIN or FCPSML creates partition FCPPAR

- Creates partition GEN (from the end of last partition to top of memory).

SYSTEM VMR (Cont.)

- Installs tasks built during Phase II.
- If you selected direct access to device registers for IP11/IP300, ICS/ICR, UDC11, or DSS/DRS devices, creates the respective device common, which overmaps the I/O page.

For unmapped systems, it is not possible for SYSVMR.CMD to create an optimal partition structure; you must edit SYSVMR.CMD. Figure 5-3 depicts an unmapped 16K to 24K system that results from executing SYSVMR.CMD. In an unmapped 16-24K system, the lack of adequate memory prevents SYSMVR.CMD from creating PAR14K (the partition used by MAC, TKB, and ICP). Note that for unmapped systems, SYSVMR does not create driver partitions.

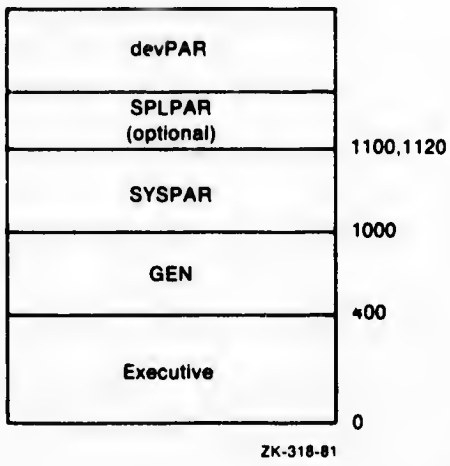

Figure 5-3 Partition Structure on Unmapped 16K through 24K Systems

For unmapped 16K to 24K systems, SYSVMR:

- Creates partition GEN. The base address of GEN is the base address specified as your response to Question 2 of the Privileged Task-Build Section. The length of GEN is always 40000 bytes.
- Creates partition SYSPAR. The base address of SYSPAR is the base address specified as your response to Question 3 of the Privileged Task-Build Section. The length of SYSPAR is 10000 bytes for a system with FCPMIN and 12000 bytes for a system with FCPSML.
- If you selected PRT, creates SPLPAR. The base address of SPLPAR is the base address specified as the response to Question 4 of the Privileged Task-Build Section. The length of SPLPAR is 10400 bytes.
- Installs tasks built during Phase II.
- If you selected direct access to device registers for an IP11/IP300, ICS/ICR, UDC11, or DSS/DRS device, creates the respective device common (which overmaps the I/O page).

SYSTEM VMR (Cont.)

Figure 5-4 depicts an unmapped 24K through 28K system that results from executing SYSVMR.CMD. Note that for unmapped systems, SYSVMR does not create driver partitions.

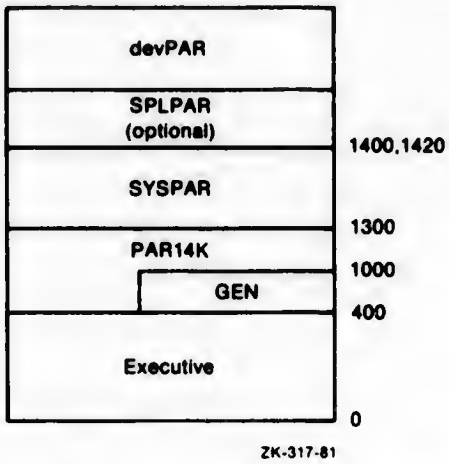

Figure 5-4 Partition Structure on Unmapped 24K through 28K Systems

or unmapped 24K through 28K systems, SYSVMR:

- Creates partition PAR14K. The base address of GEN and PAR14K is the base address specified as your response to Question 2 of the Privileged Task-Build Section. The length of GEN is always 40000 bytes; the length of PAR14K is always 70000 bytes.
- Creates partition SYSPAR. The base address of SYSPAR is the base address specified as your response to Question 3 of the Privileged Task-Build Section. The length of SYSPAR is 1000 bytes for a system with FCPMIN and 1200 bytes for a system with FCPSML.
- If you selected PRT, creates SPLPAR. The base address of SPLPAR is the base address specified as the response to Question 4 of the Privileged Task-Build Section. The length of SPLPAR is 10400 bytes.
- Installs tasks built during Phase II.
- If you selected direct access to device registers for an IP11/IP300, ICS/ICR, UDC11, or DSS/DRS device, creates the respective device common (which overmaps the I/O page).

SYSTEM VMR (Cont.)

5.6.1 Invoking VMR from an On-line Host System

If you are running SYSGEN on an on-line system, SYSGEN completes Phase II execution without invoking VMR (that is, SYSGEN does not invoke the command file SYSVMR.CMD). The reason for this is that you must use V4.1 of VMR and, in an on-line environment, SYSGEN cannot tell which version of VMR is available on your on-line system.

Therefore, if you invoked SYSGEN on an on-line system, you must:

1. Assign the logical device LB: to the baseline disk
2. Set your UIC to the target UIC (that is, [1,54] for mapped systems, or [1,50] for unmapped systems)
3. Install VMR V4.1
4. Invoke VMR and use SYSVMR.CMD

You may accomplish this by entering the following commands after Phase II completes execution:

```
>ASN (ddu:)=LB:
>SET /UIC=[1,54]
>INS ddu:$VMR
>VMR @SYSVMR
```

where ddu: is the device mnemonic of the baseline disk.

5.6.2 Using VMR to Create Partitions for RMS-11 Libraries

If you want to create the partitions for the RMS-11 resident library(s), while you are in VMR, use VMR SET commands. The following VMR SET commands can be used as a guide, but you must replace the word "base" with the octal address of the base of the partition and you must replace the word "size" with the size of the resident library. Sizes of the resident libraries can be determined from the .MAP files in UFD [1,34], or from the sample VMR SET commands contained in [1,2]STARTUP.CMD.

- Create the partition RMSRES. Note that the size of this partition depends on whether you intend to use the full-function RMSRES library, or the subset library RMSRESSUB (which only supports sequential and relative file organizations).

```
SET /MAIN=RMSRES:base:size:COM
```

- If you want to use the RMSDAP resident library to access RMS-11 files on remote nodes, create the partition DAPRES.

```
SET /MAIN=DAPRES:base:size:COM
```

Example 5-1 Annotated Terminal Output from SYSGEN Phase II

```
>SET /UIC
UIC=[200,200]
>@SYSGEN2
>;
>; RSX-11M V4.1 BL35-A System Generation Phase II -- version 2.0
>;
>; 21-FEB-83 17:30:36
>;
>*  1. UIC of SGNPARM.CMD if not [200,200] [S]:
>;
>; RL01/RL02 distribution kit SYSGEN version 2.0 for RSX-11M BL35-A
>;
>; Co(  nuation from SYSGEN PHASE I done on 21-FEB-83 at 17:25:46
>;
>; SYSGEN assumes that the sar disk is already mounted in DL1: with
>; UFD [1,34].
>;
>;
>*  2. Do you want to inhibit execution of MCR commands (PREPGEN)? [Y/N]: Y
>*  3. Use an input saved answer file? [Y/N]: N
>*  5. Name of output saved answer file [D: DL0:[200,200]SYSSAVED.CMD;2] [S]:
>;
>; Phase II output saved answers created in file DL0:[200,200]SYSSAVED.CMD;2
>;
>*  7. Enter device for EXCPRV disk when it is ready (ddu:) [D: DL1:] [S]: DL1:
>MOU DL1:EXCPRV
>;
>; Library build
>;
>;
>; Executive task build
>;
>*  1. List Executive map? [Y/N]: N
>;
>; System image creation
>;
>;
>; Full duplex terminal driver task build
>;
>;
>; Loadable driver task build
>;
>*  4. Build all selected loadable drivers into DRVPAR? [Y/N]: Y
>;
>; Common block task build
>;
>; Build the ANSLIB flavor of the FCS resident library common
>;
>* 11. Pause to edit any task build .CMD or .ODL files? [Y/N]: N
>;
>; Creating the task build .CMD and .ODL files in DL1:[1,24]
>;
>;
>; Privileged task build
>;
>;
>;       Note that the following tasks will be built for your system:
>;
>;         BOO     DMO      FCPMDL  ICP      INI      INS      PMT
>;         MCR     DCL      MOU     OMG      OMGCLI   OMGPRT   LPP
>;         F11MSG  MTAACP   SAV     TKTN     UFD      LOA      UNL
>;         PMD     RMD      SHF     ACNT     BYE      HELBRO
>;         SHUTUP  ACS      ERRLOG  ELI      RCT
>;
>;
>*  1. Map device for privileged tasks (ddu:) [D:  NL:] [S]:
>*  6. Delete task build .CMD and .ODL files after building? [Y/N]: Y
>;
>;
>; Creating the task build .CMD and .ODL files in DL1:[1,24]
>;
>;
>; System VMR
>;
>*  1. Edit SYSVMR.CMD? [Y/N]: N
>;
```

(continued on next page)

Example 5-1 (Cont.) Annotated Terminal Output from SYSGEN Phase II

```
>! An alternate version of SYSLIB.OLB, the system object library, was
>! created to provide support for ANSI magtape/FCS bis-buffering (which
>! you selected in Phase I).  You may want to rebuild DMP, FLX, PIP, and
>! VFY in Phase III to use ANSLIB.OLB.  Note, however, building tasks with
>! ANSLIB.OLB causes an increase in the size of tasks as compared to the
>! SYSLIB.OLB version of the tasks.
>!
>! A memory resident library of FCS routines (which you selected in Phase I)
>! was built to help reduce task memory requirements.  You may want to rebuild
>! tasks in Phase III to link to the FCS resident library.
>!
>! Because of the lack of adequate disk space on the RSXM35 disk, the tasks
>! BAD, BRU, CDA, CMP, CRF, DMP, FMT, IOX, PAT, VFY, and ZAP were not
>! included in the baseline system.   If you want these tasks in your target
>! system, they should be built in Phase III.
>!
>! When SYSGEN finishes, boot in your target system and save the system with a
>! bootstrap.  For example:
>!
>!     >BOO [1,54]RSX11M
>!     XDT: 35-A
>!
>!     XDT>G
>!     RSX11M V4.1 BL35-A
>!
>!
>!     >TIM 11:23 14-OCT-81
>!     >SAV /WB
>!
>!      RSX11M V4.1 BL35-A      128.K   MAPPED
>!     >RED DL:=SY:
>!     >RED DL:=LB:
>!     >MOU DL:RSXM35
>!     >
>!     .
>!     .
>!     .
>!
>!
>! End of SYSGEN phase II at 17:40:03 on 21-FEB-83
>!
>@ <EOF>
>@SYSGEN2
>!
>! RSX-11M V4.1 BL35-A System Generation Phase II -- version 2.0
>!
>! 21-FEB-83 17:40:24
>!
>*  1. UIC of SGNPARM.CMD if not [200,200] [S]:
>!
>! RL01/RL02 distribution kit SYSGEN version 2.0 for RSX-11M BL35-A
>!
>! Continuation from SYSGEN PHASE I done on 21-FEB-83 at 17:25:46
>!
>! SYSGEN assumes that the sys disk is already mounted in DL1: with
>! UFD [1,34].
>!
>!
>*  2. Do you want to inhibit execution of MCR commands (PREPGEN)? [Y/N]: N
>*  3. Use an input saved answer file? [Y/N]: Y
>*  4. Name of input saved answer file [D: DL0:[200,200]SYSSAVED.CMD;1] [S]: SYSSAVED.CMD;2
>!
>! Phase II input saved answers
>! created on 21-FEB-83 at 17:31:17
>! by SYSGEN version 2.0
>! are from file DL0:[200,200]SYSSAVED.CMD;2
>!
>*  5. Name of output saved answer file [D: DL0:[200,200]SYSSAVED.CMD;2] [S]:
>!
>! Phase II output saved answers created in file DL0:[200,200]SYSSAVED.CMD;2
>!
>*  6. Skip end of execution breakpoints? [Y/N]: Y
>*  7. Enter device for EXCPRV disk when it is ready (ddu:) [D: DL1:] [S]: DL1:
>!
>MOU DL1:EXCPRV
>LOA LP:
```

(continued on next page)

Example 5-1 (Cont.) Annotated Terminal Output from SYSGEN Phase II

```
>INS $PIP
>INS $EDI
>INS $LBR
>INS SY:[1,54]TKB.TSK;1/TASK=...TKL
>ASN SY:=LB:
>PIP /FR

DL0: has 14544. blocks free, 5936. blocks used out of 20480.
Largest contiguous space = 9578. blocks
1395. file headers are free, 141. headers used out of 1536.

>;
>; Start of library build at 17:41:49 on 21-FEB-83
>;
>SET /UIC=[1,1]
>PIP LB:ANSLIB.OLB/NV=LB:SYSLIB.OLB
>LBR LB:ANSLIB/RP=DL1:FCSMTA
Module 'ANSPAD' replaced

Module 'ASSLUN' replaced

Module 'BIGBUF' replaced

Module 'CLOSE ' replaced

Module 'CONTRL' replaced

Module 'CREATE' replaced

Module 'DIRECT' replaced

Module 'FCSTYP' replaced

Module 'GET   ' replaced

Module 'GETSQ ' replaced

Module 'OPEN  ' replaced

Module 'OPENR ' replaced

Module 'OPFID ' replaced

Module 'OPFNB ' replaced

Module 'PARSFN' replaced

Module 'POINT ' replaced

Module 'PUT   ' replaced

Module 'PUTSQ ' replaced

Module 'RDWAIT' replaced

Module 'RETADR' replaced

Module 'RSTFDB' replaced

Module 'RWBLK ' replaced

Module 'RWLONG' replaced

Module 'WATSET' replaced

Module 'WTWAIT' replaced

Module 'WTWATD' replaced

>SET /UIC=[1,24]
>PIP DL1:MCR.OBJ/NV/NM=[12,24]*.OBJ
>LBR DL1:MCR/RP=DL1:MCR.OBJ
Module 'DV20V ' replaced
```

(continued on next page)

Example 5-1 (Cont.) Annotated Terminal Output from SYSGEN Phase II

```
Module 'SPSOV ' replaced

Module 'STSUB ' replaced

Module 'SX1OV ' replaced

Module 'SX2OV ' replaced

Module 'SX3OV ' replaced

Module 'SX4OV ' replaced

>PIP SY:[12,24]*.OBJ;*/DE/NM
>;
>; End of library build at 17:53:19 on 21-FEB-83
>;
>;
>; Start of Executive task build at 17:53:19 on 21-FEB-83
>;
>PIP [1,34]*.*;*/DE/NM
>TKL @LB:RSXBLD
>;
>; End of Executive task build at 17:57:53 on 21-FEB-83
>;
>;
>; Start of system image creation at 17:57:54 on 21-FEB-83
>;
>SET /UIC=[1,54]
>PIP RSX11M.SYS/CO/NV/BL:498.=RSX11M.TSK
>;
>; End of system image creation at 17:58:01 on 21-FEB-83
>;
>;
>; Start of full duplex terminal driver task build at 17:58:02 on 21-FEB-83
>;
>SET /UIC=[1,24]
>TKL @LB:TTDRVBLD
>;
>; End of full duplex terminal driver task build at 17:59:01 on 21-FEB-83
>;
>;
>; Start of loadable driver task build at 17:59:02 on 21-FEB-83
>;
>TKL @DL1:DDDRVBLD
>TKL @DL1:DLDRVBLD
>TKL @DL1:DUDRVBLD
>TKL @DL1:LPDRVBLD
>TKL @DL1:MSDRVBLD
>REM TKL
>;
>; End of loadable driver task build at 18:01:49 on 21-FEB-83
>;
>;
>; Start of common block task build at 18:01:50 on 21-FEB-83
>;
>; Build the ANSLIB flavor of the FCS resident library common
>;
>;
>; Creating the task build .CMD and .ODL files in DL1:[1,24]
>;
>INS SY:[1,54]TKB.TSK;1/TASK=...TKL
>TKL @DL1:[1,24]FCSRS1BLD.CMD
>REM TKL
>;
>; End of common block task build at 18:04:03 on 21-FEB-83
>;
>;
>; Start of privileged task build at 18:04:03 on 21-FEB-83
>;
>;
>;       Note that the following tasks will be built for your system:
>;
>;         DDO     DMO     FCPMDL  ICP     INI     INS     PMT
>;         MCR     DCL     MCU     QMG     QMGCLI  QMGPRT  LPP
>;         F11MSG  MTAACP  SAV     TKTN    UFD     LOA     UNL
>;         PMD     RMD     SHF     ACNT    BYE     HELLO
>;         SHUTUP  ACS     ERRLOG  ELI     RCT
```

(continued on next page)

Example 5-1 (Cont.) Annotated Terminal Output from SYSGEN Phase II

```
>;
>;
>;
>;
>; It is assumed that [1,1]FCSRES.STB is an ANSLIB version of the FCS
>; resident library
>;
>;
>; Creating the task build .CMD and .ODL files in DL1:[1,24]
>;
>INS SY:[1,54]TKB.TSK;1/TASK=...TKL
>TKL @DL1:[1,24]BOOBLD.CMD
>TKL @DL1:[1,24]DMOBLD.CMD
>TKL @DL1:[1,24]FCPMDLBLD.CMD
>TKL @DL1:[1,24]ICPBLD.CMD
>TKL @DL1:[1,24]INIBLD.CMD
>TKL @DL1:[1,24]INSBLD.CMD
>TKL @DL1:[1,24]PMTBLD.CMD
>TKL @DL1:[1,24]MCMBLD.CMD
>TKL @DL1:[1,24]DCLBLD.CMD
>TKL @DL1:[1,24]MOUBLD.CMD
>TKL @DL1:[1,24]QMGRESBLD.CMD
>TKL @DL1:[1,24]QCLRESBLD.CMD
>TKL @DL1:[1,24]QPRBLD.CMD
>TKL @DL1:[1,24]LPPRECBLD.CMD
>TKL @DL1:[1,24]F11MSGBLD.CMD
>TKL @DL1:[1,24]MTABLD.CMD
>TKL @DL1:[1,24]SAVBLD.CMD
>TKL @DL1:[1,24]TKNBLD.CMD
>TKL @DL1:[1,24]UFDBLD.CMD
>TKL @DL1:[1,24]LOABLD.CMD
>TKL @DL1:[1,24]UNLRESBLD.CMD
>TKL @DL1:[1,24]PMDRESBLD.CMD
>TKL @DL1:[1,24]RMDBLD.CMD
>TKL @DL1:[1,24]SHFBLD.CMD
>TKL @DL1:[1,24]ACNRESBLD.CMD
>TKL @DL1:[1,24]BYEBLD.CMD
>TKL @DL1:[1,24]MELRESBLD.CMD
>TKL @DL1:[1,24]BROBLD.CMD
>TKL @DL1:[1,24]SHUBLD.CMD
>TKL @DL1:[1,24]ACSRESBLD.CMD
>TKL @DL1:[1,24]ERLBLD.CMD
>TKL @DL1:[1,24]ELIRESBLD.CMD
>TKL @DL1:[1,24]RCTBLD.CMD
>REM TKL
>;
>; End of privileged task build at 19:28:10 on 21-FEB-83
>;
>;
>; Delete the task build .CMD and .ODL files
>;
>PIP DL1:[1,24]BOOBLD.CMD;0/DE/NM,BOOBLD.ODL;0
>PIP DL1:[1,24]DMOBLD.CMD;0/DE/NM,DMOBLD.ODL;0
>PIP DL1:[1,24]FCPMDLBLD.CMD;0/DE/NM,FCPMDLBLD.ODL;0
>PIP DL1:[1,24]ICPBLD.CMD;0/DE/NM,ICPBLD.ODL;0
>PIP DL1:[1,24]INIBLD.CMD;0/DE/NM,INIBLD.ODL;0
>PIP DL1:[1,24]INSBLD.CMD;0/DE/NM,INSBLD.ODL;0
>PIP DL1:[1,24]PMTBLD.CMD;0/DE/NM,PMTBLD.ODL;0
>PIP DL1:[1,24]MCMBLD.CMD;0/DE/NM,MCMBLD.ODL;0
>PIP DL1:[1,24]DCLBLD.CMD;0/DE/NM,DCLBLD.ODL;0
>PIP DL1:[1,24]MOUBLD.CMD;0/DE/NM,MOUBLD.ODL;0
>PIP DL1:[1,24]QMGRESBLD.CMD;0/DE/NM,QMGRESBLD.ODL;0
>PIP DL1:[1,24]QCLRESBLD.CMD;0/DE/NM,QCLRESBLD.ODL;0
>PIP DL1:[1,24]QPRBLD.CMD;0/DE/NM,QPRBLD.ODL;0
>PIP DL1:[1,24]LPPRESBLD.CMD;0/DE/NM,LPPRESBLD.ODL;0
>PIP DL1:[1,24]F11MSGBLD.CMD;0/DE/NM,F11MSGBLD.ODL;0
>PIP DL1:[1,24]MTABLD.CMD;0/DE/NM,MTABLD.ODL;0
>PIP DL1:[1,24]SAVBLD.CMD;0/DE/NM,SAVBLD.ODL;0
>PIP DL1:[1,24]TKNBLD.CMD;0/DE/NM,TKNBLD.ODL;0
>PIP DL1:[1,24]UFDBLD.CMD;0/DE/NM,UFDBLD.ODL;0
>PIP DL1:[1,24]LOABLD.CMD;0/DE/NM,LOABLD.ODL;0
>PIP DL1:[1,24]UNLRESBLD.CMD;0/DE/NM,UNLRESBLD.ODL;0
>PIP DL1:[1,24]PMDRESBLD.CMD;0/DE/NM,PMDRESBLD.ODL;0
>PIP DL1:[1,24]RMDBLD.CMD;0/DE/NM,RMDBLD.ODL;0
>PIP DL1:[1,24]SHFBLD.CMD;0/DE/NM,SHFBLD.ODL;0
>PIP DL1:[1,24]ACNRESBLD.CMD;0/DE/NM,ACNRESBLD.ODL;0
```

(continued on next page)

Example 5-1 (Cont.) Annotated Terminal Output from SYSGEN Phase II

```
>PIP DL1:[1,24]BYEBLD.CMD;0/DE/NM,BYEBLD.ODL;0
>PIP DL1:[1,24]HELRESBLD.CMD;0/DE/NM,HELRESBLD.ODL;0
>PIP DL1:[1,24]BROBLD.CMD;0/DE/NM,BROBLD.ODL;0
>PIP DL1:[1,24]SHUBLD.CMD;0/DE/NM,SHUBLD.ODL;0
>PIP DL1:[1,24]ACSRESBLD.CMD;0/DE/NM,ACSRESBLD.ODL;0
>PIP DL1:[1,24]ERLBLD.CMD;0/DE/NM,ERLBLD.ODL;0
>PIP DL1:[1,24]ELIRESBLD.CMD;0/DE/NM,ELIRESBLD.ODL;0
>PIP DL1:[1,24]RCTBLD.CMD;0/DE/NM,RCTBLD.ODL;0
>;
>; Start of system VMR at 19:29:35 on 21-FEB-83
>;
>SET /UIC=[1,54]
>;
>INS SY:*BOO;-1
>INS SY:*VMR;-1
>ASN SY:=LB:
>VMR @SYSVMR
VMR -- *DIAG*-Partition reduced to executive common size❶
INS EXCOM1
VMR -- *DIAG*-Partition reduced to executive common size
INS EXCOM2
VMR -- *DIAG*-Loadable driver larger than 4K
LOA TT:
VMR -- *DIAG*-Installed tasks may no longer fit in partition
SET /TOP=DRVPAR:-*
POOL=1200;9154.:09154.
EXCOM1 117734 00120000 00014600 MAIN COM❷
EXCOM2 117670 00134600 00006400 MAIN COM
LDRPAR 117624 00143200 00002600 MAIN TASK
TTPAR  117260 00146000 00040000 MAIN TASK
DRVPAR 116734 00206000 00025700 MAIN SYS
       116670 00206000 00003700 SUB  DRIVER - DD:
       116570 00211700 00002300 SUB  DRIVER - DL:
       116470 00214200 00012100 SUB  DRIVER - DU:
       116370 00226300 00001100 SUB  DRIVER - LP:
       116270 00227400 00004300 SUB  DRIVER - MS:
SYSPAR 116170 00233700 00010100 MAIN TASK
FCSRES 116124 00244000 00031700 MAIN COM
FCPPAR 116060 00275700 00024000 MAIN SYS
GEN    116014 00321700 00456100 MAIN SYS
LDR... 13.02  117510 LDRPAR 248. 00002600 LB0:-00012107 FIXED
TKTN   04.8   111444 SYSPAR 248. 00010100 LB0:-00015237
...RMD 2.0    114770 GEN    225. 00027100 LB0:-00016670
F11MSG V0012  114060 GEN    200. 00005600 LB0:-00015214
MTAACP 0013   113744 GEN    200. 00014700 LB0:-00016505
...DMO 03.01  114424 GEN    160. 00014600 LB0:-00014272
MCR... 3.01   112720 SYSPAR 160. 00010100 LB0:-00015056
...DCL 02     112604 GEN    160. 00040000 LB0:-00015522
...MOU 2503   112124 GEN    160. 00037700 LB0:-00015102
...MCR 2.01   111560 GEN    160. 00020000 LB0:-00015277
F11ACP 0403   115700 FCPPAR 149. 00024000 LB0:-00014335
ERRLOG V2.1   114310 GEN    148. 00040000 LB0:-00017251
PMT... 01.52  113264 GEN    148. 00006300 LB0:-00015034
PMD... 07.2   113150 GEN    140. 00015700 LB0:-00016246
SHF... 5.08   111674 SYSPAR 105. 00010100 LB0:-00016467
...INS 7.03   113400 GEN    100. 00034500 LB0:-00014542
...SAV 3.1    112010 GEN    100. 00033000 LB0:-00016374
...UFD V0412  111330 GEN    100. 00005700 LB0:-00015247
RCT... 2.02   111100 GEN    100. 00010200 LB0:-00017336
QMG... 2.3    115564 GEN     75. 00031300 LB0:-00015160
PRT... 2.0    115220 GEN     70. 00001100 LB0:-00014601
LPO    02.02B 115104 GEN     70. 00013600 LB0:-00016274
...ACS 2.01   114654 GEN     70. 00004500 LB0:-00015264
...AT. 02     113514 GEN     64. 00060000 LB0:-00014671
...QUE 2.1A   115450 GEN     50. 00020000 LB0:-00016124
...PRI 2.1A   115334 GEN     50. 00020000 LB0:-00016124
...BOO 06.02  114540 GEN     50. 00021700 LB0:-00014231
...ELI V1.03  114174 GEN     50. 00017000 LB0:-00017315
...MAG 01.02  113630 GEN     50. 00031500 LB0:-00016212
...LOA 03.3   113034 GEN     50. 00032300 LB0:-00016633
...HEL 01.0   112470 GEN     50. 00023400 LB0:-00017130
...BYE 04.2   112354 GEN     50. 00012400 LB0:-00017067
...BRO V04.3  112240 GEN     50. 00030300 LB0:-00017172
...UNL 3.1    111214 GEN     50. 00024400 LB0:-00015463
LPO:    Loaded
DMO:    Loaded
```

(continued on next page)

Example 5-1 (Cont.) Annotated Terminal Output from SYSGEN Phase II

```
DD1:    Loaded
DL0:    Loaded
DL1:    Loaded
DU0:    Loaded
DU1:    Loaded
MS0:    Loaded
TT0:    Loaded
TT1:    Loaded
TT2:    Loaded
TT3:    Loaded
TT4:    Loaded
NL0:
TI0:
CO0:  TT0:
CL0:  TT0:
LB0:  DD0:
SY0:  DD0:
>!
>! End of system VMR at 19:33:40 on 21-FEB-83
>!
>!
>! An alternate version of SYSLIB.OLB, the system object library, was
>! created to provide support for ANSI magtape/FCS bis-buffering (which
>! you selected in Phase I).  You may want to rebuild DMP, FLX, PIP, and
>! VFY in Phase III to use ANSLIB.OLB.  Note, however, building tasks with
>! ANSLIB.OLB causes an increase in the size of tasks as compared to the
>! SYSLIB.OLB version of the tasks.
>!
>! A memory resident library of FCS routines (which you selected in Phase I)
>! was built to help reduce task memory requirements.  You may want to rebuild
>! tasks in Phase III to link to the FCS resident library.
>!
>! Because of the lack of adequate disk space on the RSXM35 disk, the tasks
>! BAD, BRU, CDA, CMP, CRF, DMP, FMT, IDX, PAT, VFY, and ZAP were not
>! included in the baseline system.   If you want these tasks in your target
>! system, they should be built in Phase III.
>!
>! When SYSGEN finishes, boot in your target system, and save the system with a
>! bootstrap.  For example:
>!
>!      >BOO [1,54]RSX11M
>!      XDT: 35-A
>!
>!      XDT>G
>!      RSX11M V4.1 BL35-A
>!
>!
>!      >TIM 11:23 14-OCT-81
>!      >SAV /WB
>!
>!       RSX11M V4.1 BL35-A      128.K   MAPPED
>!      >RED DL:=SY:
>!      >RED DL1:=LB:
>!      >MOU DL:RSXM35
>!      >@DL:[1,2]STARTUP
>!      .
>!      .
>!      .
>!
>ASN =LB:
>REM PIP
>REM EDI
>REM LBR
>DMO DL1:EXCPRV
DMO -- TT0:    dismounted from DL1:
DMO -- TT0:    dismounted from DL1:    *** Final dismount initiated ***
19:33:49  *** DL1: -- Dismount complete

>!
>! End of SYSGEN phase II at 19:33:49 on 21-FEB-83
>!
>SET /UIC=[200,200]
>@ <EOF>
>BOO [1,54]RSX11M
XDT: 35-A
```

(continued on next page)

Example 5-1 (Cont.) Annotated Terminal Output from SYSGEN Phase II

```
XDT>G
RSX11M V4.1 BL35-A


 DEVICE DU00: NOT IN CONFIGURATION
 DEVICE DU01: NOT IN CONFIGURATION
 DEVICE MS00: NOT IN CONFIGURATION
>
 TIM 19:35 21-FEB-83
>TIM
19:35:03 21-FEB-83
>SAV /WB

  RSX-11M V4.1 BL35-A ''     MAPPED
>RED DL:=SY:
>RED DL:=LB:
>MOU DL:RSXM35
>@DL:[1,2]STARTUP
>! PLEASE ENTER TIME AND DATE (HR:MN DD-MMM-YY) [S]: 19:36 21-FEB-83
>TIM 19:36 21-FEB-83
>! ENTER LINE WIDTH OF THIS TERMINAL [D D:132.]:
>SET /BUF=TI:132.
>ACS SY:/BLKS=512.
>!
>! This system startup command file (LB:[1,2]STARTUP.CMD) contains a
>! template of commands to initialize the queue print spooler and queue
>! LP0:, initialize the error logger, initialize the DCL CLI, and install
>! the RMS Library and Utilities.  As is these commands are commented out
>! and are not executed.  To include these commands as part of the
>! startup procedure, edit the file to remove the period and semi-colon
>! (.!) comment delimiter from the beginning of each line.  These
>! commands may be useful for initializing the various facilities for
>! your installation or else they may provide a model with which to
>! tailor initialization commands for your particular installation.
>!
>@ <EOF>
>
>
```

Notes for the terminal output from SYSGEN Phase II (for a mapped target system) while running on a baseline system.

1. Invoke Phase II of SYSGEN and continue answering questions.

2. The default name for the output saved answer file from Phase I is SYSSAVED.CMD. Press the RETURN key if you want to specify the same file name for the ouput saved answer file from Phase II. At the end of Phase II, if you select the default name of the output saved answer file, SYSGEN will have created a single saved answer file named SYSSAVED.CMD which contains the responses from Phase I and Phase II questions.

3. You may see some diagnostic (*DIAG*) messages in your terminal output during the System VMR Section of Phase II. They are no cause for alarm; they simply supply diagnostic information about partition sizes. (See Chapter 10 of the RSX-11M/M-PLUS System Management Guide for details on VMR messages.)

4. During the System VMR Section, VMR displays information concerning pool, partitions, installed tasks, and devices as an indication of its successful completion.

5. At the end of Phase II, you should bootstrap your virgin system and make it hardware bootable. See Chapter 6 for details.

NOTE

If you are generating an unmapped target system, follow the instructions at the end of Phase II. Refer to Chapter 6 for suggestions on procedures to follow between Phase II and Phase III.

CHAPTER 6

POSTSYSTEM GENERATION GUIDELINES

After the completion of SYSGEN Phase II, several steps remain before your system generation is actually complete. These steps vary depending on whether you are generating a mapped or an unmapped system and whether you are running SYSGEN stand alone or on line. This chapter describes some of those steps and provides some suggestions for maximizing utilization of your system resources.

The information presented in this chapter is only a guideline. The steps presented occur in a sequence and, therefore, are not intended to be executed at random. You may, however, find that you can skip some of the steps because of the type of distribution kit you have, the type of system you have generated, and the level of backup security needed.

6.1 DO YOU HAVE A VIRGIN SYSTEM?

At the end of Phase II -- after SYSVMR.CMD has increased the system image file (RSX11M.SYS) -- SYSGEN has produced a bootable RSX-11M system known as a virgin system. Once you have bootstrapped a virgin system, that system is referred to as the saved target system. These are necessary distinctions within the context of this chapter. (See the definition of virgin system and target system in Chapter 1.) You must have a virgin system to begin performing the steps listed in this chapter.

If you are generating your RSX-11M system from an on-line host, SYSGEN completes Phase II without invoking SYSVMR.CMD. If you have not already done so, make any necessary edits to SYSVMR.CMD and then invoke VMR as described at the end of Chapter 5.

6.2 STEPS FOR MAPPED TARGET SYSTEMS

If you have a mapped virgin system, follow the procedure beginning at Section 6.2.1 after Phase II completes.

If you have either a standard, unmapped virgin system (where the base address of the GEN partition is the standard address of 40000) or a nonstandard, unmapped virgin system (where the base address of the GEN partition is at an address of other than 40000), start at Section 6.3.

NOTE

In the following procedure, assume that ddu: contains the virgin system on the disk volume labeled RSXM35, and that RSXM35 contains a mapped 124K virgin system in UFD [1,54] and includes support for the Executive Debugging Tool (XDT).

6.2.1 How to Bootstrap the Virgin System

Follow the steps listed to bootstrap and save the virgin system.

If the virgin system includes support for the Executive Debugging Tool (XDT), the console terminal displays a prompt (XDT>) from XDT during the bootstrap procedure. To continue, enter a G from the console terminal.

Note that, if you are generating your system from a stand-alone host system, you must install the version of BOO ($BOO;1) built to run on the baseline system, not the most recent version of BOO ($BOO) built to run on the target system. Also note that bootstrapping the virgin system from an on-line host system aborts the current running system and brings up the virgin system.

```
>INS $BOO;1                          (For a stand-alone host system)
>INS $BOO                            (For an on-line host system)
>BOO ddu:[1,54]RSX11M.SYS

XDT: 35-A


XDT>G

 RSX11M V4.1 BL35-A

>TIM 11:23 10-MAY-83                 (Set the time and date)
>TIM                                 (Enter the TIME command)
11:24 10-MAY-83
>
```

The purpose of entering the TIM command after you set the time and date is to ensure that your new system performs some fundamental operations. The TIME command utilizes enough of the system resources to be a satisfactory test.

Now you are ready to save your system and make the target system hardware bootable.

6.2.2 How to Make Your Target System Hardware Bootable

Follow the steps below to save your target system. You use the SAV /WB command to make the target system disk hardware bootable. See the SAVE command in the RSX-11M/M-PLUS MCR Operations Manual for details on what happens when you save the system.

NOTE

If you do not want to write the bootblock the first time you save the system, omit the /WB switch the first time through the procedure. When you are satisfied that the system works correctly after saving it, repeat the following steps and include the /WB switch.

Once you have completed the following steps, your target system disk can be hardware bootstrapped to bring up your new RSX-11M system.

```
>SAV /WB

 RSX11M V4.1 BL35-A              124.K MAPPED

>RED ddu:=SY:
>RED ddu:=LB:
>MOU ddu:RSXM35
>@ddu:[1,2]STARTUP.CMD
>* PLEASE ENTER TIME AND DATE (HR:MN DD-MMM-YY) [S]:11:30 10-MAY-83
```

6.2.3 Invoke Phase III to Task-Build BRU

To execute some of the remaining steps in this chapter, you need to build the Backup and Restore Utility (BRU). The most efficient way to do this is to invoke Phase III of SYSGEN and task-build BRU. Refer to Chapter 7 for details on Phase III. After you task-build the utility, exit from Phase III, install BRU, and resume working at the next step.

NOTE

You may want to back up the system disk at several intervals during the remaining steps to protect yourself against any accident that might corrupt the contents of the system disk. Backing up the system disk is not critical at this point. However, after you task-build BRU you may back up your system disk whenever you like. (See Section 6.2.13.)

6.2.4 How to Recover Space on the Target System Disk

To make efficient use of the space available on your target system disk, you should delete unnecessary files from the disk. This is an optional step, particularly for users with larger distribution kits. However, RL01/02 users may find this step useful.

NOTE

Be sure that you have saved your system and made the target system disk hardware bootable before proceeding with these steps.

Follow the steps below for recovering space on the target system disk:

1. Purge the system UFD to eliminate baseline files that have been superseded by target system files:

```
>SET /UIC=[1,54]
>INS $PIP
>PIP ddu:*.*/PU
```

2. Delete the privileged baseline files that were not eliminated by the purge operation. Files to delete may include the baseline Autoconfigure task ACF.BSL, baseline drivers for devices not supported on your target system, and the baseline FCP FCPSML.TSK.

```
>SET /UIC=[1,54]
>PIP ddu:ACF.BSL;1/DE,DPDRV.*;1,FCPSML.TSK;1
```

3. Use BRU to backup the target system disk to another disk of the same type (this disk should be checked for bad blocks using the BAD utility before invoking BRU), or to a magnetic tape, to provide the largest possible contiguous space. (If you are copying from disk to disk, this step recovers the noncontiguous space freed by the files that were deleted and purged.) For example, assume dduu: is a second disk drive:

```
>INS $BRU
>ACS ddu:/BLKS=0
>DMO ddu:/DEV
>BRU/INI/VER
From: ddu:
To:   dduu:

BRU>CTRL Z
```

or if mtu: is a magnetic tape drive on a system with a single disk drive:

```
>INS $BRU
>LOA mtu:
>ACS ddu:/BLKS=0
>DMO ddu:/DEV
>BRU/DENS:number/REW/VER
From: ddu:
To:   mtu:

BRU>CTRL Z
```

If you used two disks for the BRU operation, remember that the newly copied disk should now be your new system disk. The disk that you used to make the new copy is now your backup copy.

When you have copied the disk, bootstrap the new system disk (that is, the one you just compressed) and continue with the remaining steps.

6.2.5 Building or Rebuilding RSX-11M Tasks

Invoke SYSGEN Phase III to build or rebuild nonprivileged, DIGITAL-supplied RSX-11M tasks. (See Chapter 7 for details on SYSGEN Phase III.)

DMP, FLX, PIP, and VFY can use ANSI magnetic tape or big-buffering capabilities, provided that you generated ANSI magnetic tape or big-buffering support into your target system. If you want any of these tasks to have ANSI magnetic tape or big-buffering capabilities (and if your target system includes the necessary support), invoke Phase III to build these tasks to link to ANSLIB.OLB.

A number of RSX-11M nonprivileged tasks can link to the FCS resident library (on mapped systems). If your system has support for the FCS resident library and if you want specific tasks to link to that library, invoke Phase III to build those tasks. Chapter 7 includes a list of tasks that can be linked to FCSRES.

If you are using the RL01/RL02 distribution kit, the following tasks are not in the baseline system:

BAD	CDA	CMP	CRF	DMP	DSC	EDT
FMT	FTB	IOX	PAT	RPT	VFY	ZAP

If you wish to include any of these tasks in your target system, invoke Phase III to build them. (BRU is available only on mapped systems; EDT is available only on mapped systems with the full-duplex terminal driver.)

BRU is also not included in the baseline system for any of the distribution kits. If you have not yet built BRU and if you wish to include BRU in your target system, invoke Phase III to build it. You can include BRU with those tasks tested by UETP by building and including it in your target system before invoking UETP.

Bear in mind that, if you intend to test your target system using the User Environment Test Package (UETP), you should first build all of the DIGITAL-supplied RSX-11M tasks that you intend to include in your target system.

6.2.6 Testing Your Target System with UETP

If you wish to test your system, invoke UETP. Before doing so, be sure that you have read Chapter 9 in the RSX-11M/M-PLUS System Management Guide. It discusses UETP in detail, including those tasks and utilities that must be built prior to invoking UETP.

NOTE

You should build any DIGITAL-supplied RSX-11M tasks for your target system during Phase III and before invoking UETP.

6.2.7 How to Transfer the Target System to a Different Type of Disk

This is an optional step intended for those users who need to transfer the virgin target system to a different type of disk. If this is not a concern for you, skip this section and go to the next one.

If you intend to transfer your virgin target system to a different type of disk, the system data base must adequately reflect the characteristics of the new target system disk. To do this, you must invoke VMR and recreate the system image using the new target system disk's characteristics. The reason for this is that the physical disk locations of the installed tasks on the new disk are different from those stored in the system image file, which still has the disk locations of the installed tasks for the old target disk. For example, if you copied your virgin target system from an RK07 to an RM05, and if you were able to software bootstrap the RM05 disk, your system will not be able to find any of the installed tasks because the tasks are probably stored in different disk locations than the system expects. Without changing the system image file, your system at best will be unpredictable.

NOTE

Your response to the SYSGEN question regarding the unit supported by the device controller must have been the exact device to which you intend to transfer your target system. For example, if you selected RK06/07 support, your response to the SYSGEN question regarding the unit supported by the DM controller must exactly match the device that you want to be hardware bootable.

If you did not specify the correct device during SYSGEN, either explicity or by selecting the default response, you must perform another SYSGEN and supply the correct reponse in the Peripheral Options Section.

Once you have ensured that the necessary device controller support is included in your system, use the following procedure to transfer your target system to the new target system disk:

1. Use the BAD utility to check for bad blocks on the disk to which you intend to transfer the target system; then initialize the disk with the MCR INI command. (See the RSX-11M/M-PLUS Utilities Manual for information on the BAD utility. The RSX-11M/M-PLUS MCR Operations Manual contains information on the MCR INI command.)

2. Software mount the disk to which you intend to transfer the target system (assume that dduu: contains the disk to which you are copying the target system):

```
>MOU dduu:RSXM35
```

3. Copy the system UFDs to the new target system disk:

```
>PIP dduu:/NV/UF/FO=ddu:[1,1]*.*,[1,2]*.*,[1,54]*.*
>PIP dduu:/NV/UF/FO=ddu:[1,3]*.*,[1,4]*.*,[1,6]*.*,[1,7]*.*
```

4. Reassign the logical devices SY: and LB: to the new target system disk:

```
>ASN dduu:=SY:
>ASN dduu:=LB:
```

5. Recreate the system image on the new target system disk:

```
>SET /UIC=[1,54]
>PIP RSX11M.SYS/NV/CO/BL:<n>=RSX11M.TSK
```

where <n> = (size of memory * 4) + 2

The memory size is the response given during SYSGEN to Question 3 in the Target Configuration Section.

6. Install VMR and invoke SYSVMR.CMD:

```
>INS dduu:$VMR
>VMR @SYSVMR
```

To avoid any incompatibility problems, the version of VMR that you are using must originate from your target system disk.

7. After VMR has updated the system image file and produced a virgin system, software bootstrap the virgin system and then use the MCR SAV command to make the disk hardware bootable. (Refer to Section 6.2.1 and 6.2.2 for those procedures.)

6.2.8 Rebuilding User-Written Tasks

If you have a mapped system with FCS resident library (FCSRES) support or ANSI support and you want your user-written tasks to use these resources, rebuild those tasks to include the desired support.

See the RSX-11M/M-PLUS Task Builder Manual for details on specifying ANSLIB.OLB with the DL switch as the default library and for details on using the LIBR or RESLIB options to link to FCSRES.

Remember to rebuild your privileged user-written tasks to link to the target Executive.

6.2.9 Help Files

Each distribution kit includes the file HELP.ULB, which consists of the various HELP files for the MCR, DCL, and UTILITY commands. In addition, there are introductory files included in HELP.ULB that are referred to in the Introduction to RSX-11M and RSX-11M-PLUS.

You can find HELP.ULB in UFD [1,2] on all distribution kits. However, the volume on which the HELP files reside differs for each type of kit. The following lists the various distribution kits and the various locations for HELP.ULB:

Distribution Kit	Volume
Big disk	RSXM35
RC25	RSXM35
RK06/07	CLISRC
RL01/02	HLPDCL

Follow these steps to get HELP support:

1. Establish [1,2] as the default UIC for the terminal:

```
>SET /UIC=[1,2]
```

2. Copy HELP.ULB to the LB: device (skip this step if you are using a big disk distribution kit):

```
>PIP LB:/NV=ddu:HELP.ULB
```

   If you have an RL01/02 magnetic tape distribution kit and you did not copy over your HELP files earlier, you must invoke and run BRU to copy the files from tape to disk. To do this, mount the distribution tape onto a magnetic tape drive (if the distribution tape is 800 bpi, mount the second tape volume), and issue the following command lines to BRU:

```
>BRU
BRU>/NOI/BAC:HLPDCL/DENS:number/REW/VER
From: MM:[1,2]HELP.ULB
To:   LB:
```

   NOTE

   RL01/02 users may not have sufficient space on the target system disk for all of the HELP files. In such cases, your LB: device should point to another type of disk, or you should print the help files as a listing using the LBR utility to extract the files. (See the RSX-11M/M-PLUS Utilities Manual for details on using LBR.)

3. Extract the build module from HELP.ULB, then name this module HELPBUILD.CMD:

```
>LBR HELPBUILD.CMD=HELP.ULB/EX:BUILD
```

4. Invoke the HELPBUILD command file:

```
>@HELPBUILD
```

   HELPBUILD.CMD asks a series of questions that allow you to build either FULL or BRIEF HELP support for MCR and DCL commands and the RSX-11M utilities. In addition, HELPBUILD.CMD allows you to select the introductory files used with Introduction to RSX-11M and RSX-11M-PLUS.

5. When you finish extracting the desired modules from HELP.ULB, delete the files HELPBUILD.CMD and HELP.ULB from LB:.

```
>PIP HELPBUILD.CMD;*,HELP.ULB;*/DE
```

See the the HELPBUILD.CMD file for more information.

6.2.10 Multiuser System Setup

If you have a multiuser system, you should run the Account File Maintenance Program (ACNT) to create an account file and user accounts. If you have a previously created account file, copy the account file to the new system disk. For details on ACNT, see the RSX-11M/M-PLUS System Management Guide.

You should also use an editor to create the file LOGIN.TXT in UFD [1,2] on your LB: device to provide installation news and notices to system users. For details on LOGIN.TXT, see the MCR HEL/LOG command in the RSX-11M/M-PLUS MCR Operations Manual.

You can tailor [1,2]STARTUP.CMD to your particular installation's needs. Following are some of the functions that you may want STARTUP.CMD to perform:

- Set the speed and type of terminals. (See the RSX-11M/M-PLUS MCR Operations Manual for details on the MCR SET command.)
- Install resident libraries (RMS on mapped systems only, see Section 6.2.13), utilities, and user tasks. (See the RSX-11M/M-PLUS MCR Operations Manual for details on the MCR INSTALL command.)
- Initialize the Queue Manager and Print Spooler (on mapped systems only) if the system includes Queue Manager support. (See the RSX-11M/M-PLUS System Management Guide for details on the Queue Manager.) The STARTUP.CMD file contains commands in commented form that provide a template for initializing the Queue Manager.
- Initialize DCL (on mapped systems only) if the system includes support for DCL. (See the RSX-11M/M-PLUS Command Language Manual for details on DCL.) The STARTUP.CMD file contains commands in commented form that provide a template for initializing DCL.
- Initialize the Error Logger if the system includes support for error logging. (See the RSX-11M/M-PLUS Error Logging Manual for details.) The STARTUP.CMD file contains commands in commented form that provide a template for initializing the Error Logger.

6.2.11 Establishing System Features with VMR

If terminal speeds and types and partitions are stable and certain tasks are frequently used, you may wish to establish these features in your system using VMR commands rather than having [1,2]STARTUP.CMD do it at bootstrap time. This decreases the amount of time required for the system to be ready for use after it has been bootstrapped. (See the RSX-11M/M-PLUS System Management Guide for details on VMR.)

6.2.12 How to Create a Backup Copy of the Target System Disk

Now that you have saved your target system, you should create a back-up copy to protect yourself against any accident that might corrupt the contents of the disk. First check the scratch disk for bad blocks using the BAD utility. Then using BRU, copy the target

system disk either to another disk of the same type or to magnetic tape. For example, assume dduu: is a second disk drive:

```
>BRU/INI/VER
From: ddu:
To:   dduu:

BRU>CTRL/Z
```

or mtu: is a magnetic tape drive:

```
>BRU/DENS:number/REW/VER
From: ddu:
To:   mtu:

BRU>CTRL/Z
```

6.2.13 Installing RMS-11 V2.0

On most mapped RSX-11M systems, all RMS-11 files are automatically on your system after SYSGEN.

However, for systems which were generated using either the RK06/07 or the RL01/02 distribution kits, the RMS-11 files must be copied to the new system disk after SYSGEN. If your system was not generated using one of these kits, skip this section and continue with Section 6.2.13.2.

6.2.13.1 RK06/07 and RL01/02 Procedures - To copy RMS-11 files to your new system disk, you must execute the command procedure [1,2]RMSINSTAL.CMD. Before you invoke this command file, you must task-build BRU (see Section 6.2.3). After SYSGEN Phase III builds the BRU task, you should log into a privileged account and invoke RMSINSTAL.CMD using the following command line:

```
>@[1,2]RMSINSTAL
```

This command procedure prompts you for information and executes the copy operation in the following manner:

1. RMSINSTAL.CMD asks you if want all the RMS-11 files on your system.

   If you answer "NO" to this question, all the RMS-11 files will be transferred except the .MAP files and the demonstration programs.

2. The procedure asks you to enter the name of the target disk that is to contain the RMS-11 files.

   This disk should be write-enabled.

3. RMSINSTAL deletes all copies or previous versions of the RMS-11 files on the target disk that the procedure will be copying to that disk. This step allows you to restart RMSINSTAL if errors occur the first time it is invoked.

4. RMSINSTAL displays the free space on the target disk and asks you if the target disk contains enough free space to copy the RMS-11 files.

5. RMSINSTAL displays a small table that assigns a number to each type of kit (RL01/02 disk, RL01/02 magnetic tape, RK06/07 disk, RK06/07 magnetic tape).

   Then RMSINSTAL asks you to enter the number that corresponds to your type of distribution kit.

6. If your distribution kit is on magnetic tape, RMSINSTAL asks you for the density (either 800 bpi or 1600 bpi).

7. The procedure asks you to physically mount the appropriate distribution disk or tape and then prompts you for the device name.

8. RMSINSTAL generates the appropriate BRU commands that copy RMS-11 files from the distribution kit to the target disk.

NOTE

On the RK06/07 disk and magnetic tape distribution kits, BRU may be run twice by RMSINSTAL.

When the BRU commands have been executed, the procedure displays the amount of remaining free space on the target disk.

The RMS-11 file copy operation is now complete. For more information on RMS-11, see the RSX-11M/RSX-11S Release Notes.

6.2.13.2 Startup Command Procedures - If all the RMS-11 files have been transferred to your system, the next step is to install the resident library(s) and the RMS-11 utilities during system startup.

To do this, you should edit LB:[1,2]STARTUP.CMD. The commands to install the resident library(s) and RMS-11 utilities already exist except that the command lines have been commented out by the period and semicolon (.;) that begins each command line. Delete the period and semicolon that proceeds each command line that you want startup to execute. For those command lines that you do not want to be executed, leave the line as it is.

Unless you have already done so with VMR (see Section 5.6.2), you must allocate a partition for each resident library you use by issuing MCR SET commands. Note that you must replace the word "base" with the octal address of the base of the partition.

You can include MCR SET commands in your startup command file or you can permanently include the RMSRES and DAPRES partitions in your system by performing the following steps:

1. Use MCR SET commands to include the necessary partions.

2. Use MCR INSTALL commands to install the tasks in the running system.

3. Use the MCR SAVE command to save RMSRES and DAPRES into the system image.

For information on the MCR SET, INSTALL, and SAVE commands, please see the RSX-11M/M-PLUS MCR Operations Manual. For more information on RMS-11, see the RMS-11 documentation and the RSX-11M/RSX-11S Release Notes.

6.2.14 Error Logging Support

If you want error logging support and you have already created your system from either an RK06/07 or an RL01/02 distribution kit, you must copy the following error logging files from either the CLISRC (RK06/07) or HLPDCL (RL01/02) distribution disk or backup set to your default library disk (LB:[1,6]):

```
[1,6]ERRLOG.ULB
[1,6]ERRLOGETC.ULB
```

The Report Generator (RPT) needs ERRLOG.ULB in order for it to work. ERRLOGETC.ULB contains a module name TUNE that fine tunes ERRLOB.ULB to your particular system by removing unneccessary modules in the universal library. For more information on RPT and ERRLOG.ULB, see the RSX-11M/M-PLUS Error Logging Manual.

6.2.15 Installing Layered Products in the Target System

If you intend to include any layered products in your target system, you can do it now. Refer to the appropriate layered product documentation for specific instructions.

6.3 STEPS FOR UNMAPPED SYSTEMS

If you have an unmapped virgin system follow the procedure beginning at Section 6.3.1 after Phase II completes.

NOTE

In the following procedure, assume that ddu: contains the virgin system on disk RSXM35 and that RSXM35 contains an unmapped 28K virgin system in UFD [1,50].

6.3.1 Building or Rebuilding RSX-11M Tasks

Invoke SYSGEN Phase III to build or rebuild nonprivileged, DIGITAL-supplied RSX-11M tasks that you wish to start at the nonstandard (for nonstandard unmapped systems) or the standard (for standard unmapped systems) base address of the GEN partition in your target system.

NOTE

In order for your system to work correctly after you save the target system, be sure to build TKB, PIP, and EDI before you bootstrap the target system. (See Chapter 7 for details on SYSGEN Phase III.)

Bear in mind that, if you intend to test your target system using the User Environment Test Package (UETP), you should first build all of the DIGITAL-supplied RSX-11M tasks that you intend to include in your target system.

6.3.2 How to Bootstrap the Virgin System

Follow the steps listed to bootstrap and save the virgin system.

Note that if you are generating your system from a stand-alone host, you must install the version of BOO ($BOO;1) built to run on the baseline system, not the most recent version of BOO ($BOO) built to run on the target system. Also note that bootstrapping the virgin system from an on-line host system aborts the current running system and brings up the virgin system.

```
>INS $BOO;1                          (For a stand-alone host system)
>INS $BOO                            (For an on-line host system)
>BOO ddu:[1,50]RSX11M.SYS

 RSX11M V4.1 BL35-A

>TIM 11:23 10-MAY-83                 (Set the time and date)
>TIM                                 (Enter the TIME command)
11:24 10-MAY-83
>
```

The purpose of entering the TIME command after you set the time and date is to ensure that your new system performs some fundamental operations. The TIME command utilizes enough of the system resources to be a satisfactory test.

Now you are ready to save your system and write the hardware bootblock on the target system disk.

6.3.3 How to Make Your Target System Hardware Bootable

Follow the steps below to save your target system. You use the SAV /WB command to make the target system disk hardware bootable. (See the SAVE command in the RSX-11M/M-PLUS MCR Operations Manual for details on what happens when you save the system.)

NOTE

If you do not want to write the bootblock the first time you save the system, omit the /WB switch the first time through the procedure. When you are satisfied that the system works correctly after saving it, repeat the following steps and include the /WB switch.

Once you have completed the following steps, your target system disk can be hardware bootstrapped to bring up your new RSX-11M system.

```
>SAV /WB

 RSX11M V4.1 BL35-A      28.K UNMAPPED

>RED ddu:=SY:
>RED ddu:=LB:
>MOU ddu:RSXM35
>@ddu:[1,2]STARTUP.CMD
>* PLEASE ENTER TIME AND DATE (HR:MN DD-MMM-YY) [S]:11:25 10-MAY-83
```

6.3.4 Invoke Phase III to Task-Build DSC

To execute some of the remaining steps in this chapter, you need the Disk Save and Compress utility (DSC). The most efficient way to do this is to invoke Phase III of SYSGEN and task-build DSC. Refer to Chapter 7 for details on Phase III. After you task-build DSC, exit from Phase III, install DSC, and resume working at the next step.

NOTE

You may want to back up the system disk at several intervals during the remaining steps to protect yourself against any accident that might corrupt the contents of the system disk. This is not critical. However, after you task-build DSC, you may back up your system disk whenever you like. (See Section 6.3.10.2.)

6.3.5 How to Recover Space on the Target System Disk

To make efficient use of the space available on your target system disk, you should delete unnecessary files from the disk. This is an optional step, particularly for users with larger distribution kits. However, RL01/02 users may find this step useful.

NOTE

Be sure that you have saved your system and made it hardware bootable before proceeding with these steps.

Follow these steps for recovering space on the target system disk:

1. If you are using the big disk distribution kit, delete the unused baseline system as follows:

```
>SET /UIC=[1,54]
>INS $PIP
>PIP ddu:*.*;*/DE
```

2. Purge the system UFD to eliminate files that have been superseded by target system files:

```
>SET /UIC=[1,50]
>PIP ddu:*.*/PU
```

3. Use DSC to copy the target system disk to another disk of the same type, or to a magnetic tape, to provide the largest possible contiguous space. (This step recovers the noncontiguous space freed by the files that were deleted and purged.) For example, assume dduu: is a second disk drive:

```
>INS $DSC
>ACS ddu:/BLKS=0
>DMO ddu:/DEV
>DSC dduu:/VE=ddu:
```

or if mtu: is a magnetic tape drive on a system with a single disk drive:

```
>INS $DSC
>LOA mtu:
>ACS ddu:/BLKS=0
>DMO ddu:/DEV
>DSC mtu:/VE=ddu:        (disk to tape)
```

If you used two disks for the DSC operation, remember that the newly copied disk should now be your new system disk. The disk that you used to make the new copy is now your backup copy.

When you have copied the disk, bootstrap the new system disk (that is, the one you just copied) and continue with the remaining steps.

6.3.6 Testing Your Target System with UETP

If you wish to test your system, invoke UETP. Before doing so, be sure that you have read Chapter 9 in the RSX-11M/M-PLUS System Management Guide. It discusses UETP in detail, including those tasks and utilities that must be built prior to invoking UETP.

NOTE

You should build any DIGITAL-supplied RSX-11M tasks for your target system during Phase III and before invoking UETP.

6.3.7 How to Transfer the Target System to a Different Type of Disk

This is an optional step intended for those users who need to transfer the virgin target system to a different type of disk. If this is not a concern for you, skip this section and go to the next one.

If you intend to transfer your virgin target system to a different type of disk, the system data base must adequately reflect the characteristics of the new target system disk. To do this, you must invoke VMR and recreate the system image using the new target system disk's characteristics. The reason for this is that the physical disk locations of the installed tasks on the new disk are different from those stored in system image file which still has the disk locations of the installed tasks for the old target disk. For example, if you copied your virgin target system from a RK07 to a RM05 and if you were able to bootstrap the RM05 disk, your system will not be able to find any of the installed tasks because the tasks are probably stored in different disk locations than what the system expects. Without changing the system image file, your system at best will be unpredictable.

NOTE

Your response to the SYSGEN question regarding the unit supported by the device controller must have been the exact device to which you intend to transfer your target system. For example, if you selected RK06/07 support, your response to the SYSGEN question regarding the unit supported by the DM controller must exactly match the device that you want to be hardware bootable.

If you did not specify the correct device during SYSGEN, either explicity or by selecting the default response, you must perform another SYSGEN and supply the correct reponse in the Peripheral Options Section.

Once you have ensured that the necessary device controller support is included in your system, use the following procedure to transfer your target system to the new target system disk:

1. Use the BAD utility to check for bad blocks on the disk to which you intend to transfer the target system; then initialize the disk with the MCR INI command. (See the RSX-11M/M-PLUS Utilities Manual for information on the BAD utility. The RSX-11M/M-PLUS MCR Operations Manual contains information on the MCR INI command.)

2. Software mount the disk to which you intend to transfer the target system (assume that dduu: contains the disk to which you are copying the target system):

```
>MOU dduu:RSXM35
```

3. Copy the system UFDs to the new target system disk:

```
>PIP dduu:/NV/UF/FO=ddu:[1,1]*.*,[1,2]*.*,[1,50]*.*
>PIP dduu:/NV/UF/FO=ddu:[1,3]*.*,[1,4]*.*,[1,6]*.*,[1,7]*.*
```

4. Reassign the logical devices SY: and LB: to the new target system disk:

```
>ASN dduu:=SY:
>ASN dduu:=LB:
```

5. Recreate the system image on the new target system disk:

```
>SET /UIC=[1,50]
>PIP RSX11M.SYS/NV/CO/BL:<n>=RSX11M.TSK
```

where <n> = (size of memory * 4) + 2

The memory size is the response given during SYSGEN to Question 3 in the Target Configuration Section.

6. Install VMR and invoke SYSVMR.CMD:

```
>INS dduu:$VMR
>VMR @SYSVMR
```

To avoid any incompatibility problems, the version of VMR that you are using must originate from the target system disk.

7. After VMR has updated the system image file and produced a virgin system, software bootstrap the virgin system, and then use the MCR SAV command to make the disk hardware bootable. (Refer to Sections 6.3.2 and 6.3.3 for those procedures.)

6.3.8 Rebuilding User-Written Tasks

If your system includes ANSLIB.OLB (that is, if you selected ANSI magnetic tape support or big-buffering) and you want your user-written tasks to link to it, rebuild those tasks to include the necessary support.

See the RSX-11M/M-PLUS Task Builder Manual for details on specifying ANSLIB.OLB as the default library using the /DL switch.

Remember to rebuild your privileged user-written tasks to link to the target Executive.

6.3.9 Help Files

Each distribution kit includes the file HELP.ULB, which consists of the various HELP files for the MCR, DCL, and UTILITY commands. In addition, there are introductory files included in HELP.ULB that are referred to in the Introduction to RSX-11M and RSX-11M-PLUS.

You can find HELP.ULB in UFD [1,2] on all distribution kits. However, the volume on which the HELP files reside differs for each type of kit. The following lists the various distribution kits and the various locations for HELP.ULB:

Distribution Kit	Volume
Big disk	RSXM35
RC25	RSXM35
RK06/07	CLISRC
RL01/02	HLPDCL

Follow these steps to get HELP support:

1. Establish [1,2] as the default UIC for the terminal:

```
>SET /UIC=[1,2]
```

2. Copy HELP.ULB to the LB: device (skip this step if you are using a big disk distribution kit):

```
>PIP LB:/NV=ddu:HELP.ULB
```

NOTE

RL01/02 users may not have sufficient space on the target system disk for all of the HELP files. In such cases, your LB: device should point to a different type of disk, or you should print the help files as a listing using the LBR utility to extract them. (See the RSX-11M/M-PLUS Utilities Manual for details on using LBR.)

3. Extract the build module from HELP.ULB, then name this module HELPBUILD.CMD:

```
>LBR HELPBUILD.CMD=HELP.ULB/EX:BUILD
```

4. Invoke the HELPBUILD command file:

```
>@HELPBUILD
```

HELPBUILD.CMD asks a series of questions that allow you to build either FULL or BRIEF HELP support for MCR and DCL commands and the RSX-11M utilities. In addition, HELPBUILD.CMD allows you to select the introductory files used with Introduction to RSX-11M and RSX-11M-PLUS.

5. When you finish extracting the desired modules from HELP.ULB, delete the files HELPBUILD.CMD and HELP.ULB from LB:.

CAUTION

If you are using a big disk distribution kit, do not delete HELP.ULB -- it is your only copy.

```
>PIP HELPBUILD.CMD;*,HELP.ULB;*/DE
```

See the HELPBUILD.CMD file for more information.

6.3.10 Multiuser System Setup

If you have a multiuser system, you should run the Account File Maintenance Program (ACNT) to create an account file and user accounts. If you have a previously created account file, copy the account file to the new system disk. For details on ACNT, see the RSX-11M/M-PLUS System Management Guide.

You should also use an editor to create the file LOGIN.TXT in UFD [1,2] on your LB: device to provide installation news and notices to system users. For details on LOGIN.TXT, see the MCR HEL/LOG command in the RSX-11M/M-PLUS MCR Operations Manual.

You can tailor [1,2]STARTUP.CMD to your particular installation's needs. Following are some of the functions that you may want STARTUP.CMD to perform:

- Set the speed and type of terminals. (See the RSX-11M/M-PLUS MCR Operations Manual for details on the MCR SET command.)
- Install resident libraries, utilities, and user tasks. (See the RSX-11M/M-PLUS MCR Operations Manual for details on the MCR INSTALL command.)
- Initialize the Error Logger if the system includes support for error logging. (See the RSX-11M/M-PLUS Error Logging Manual for details.) The STARTUP.CMD file contains commands in commented form that provide a template for initializing the Error Logger.

6.3.10.1 Establishing System Features with VMR - If terminal speeds and types and partitions are stable and certain tasks are frequently used, you may wish to establish these features in your system using VMR commands rather than having [1,2]STARTUP.CMD do it at bootstrap time. This decreases the amount of time required for the system to be ready for use after it has been bootstrapped. (See the RSX-11M/M-PLUS System Management Guide for details on VMR.)

6.3.10.2 How to Create a Backup Copy of the Target System Disk - Now that you have set your target system, you should create a back-up copy to protect yourself against any accident that might corrupt the contents of the target system disk. Using DSC copy the target system disk RSXM35 either to another disk of the same type or to magnetic tape. For example, assume dduu: is a second disk drive:

```
>DSC dduu:/VE=ddu:
```

or mtu: is a magnetic tape drive:

```
>DSC mtu:/VE=ddu:
```

6.3.10.3 Installing Layered Products in the Target System - If you intend to include any layered products in your target system, you can do it now. Refer to the appropriate layered product documentation for specific instructions.

CHAPTER 7

DETAILS OF SYSGEN PHASE III

Phase III is the last of the three interactive system generation procedures. This is the general task-building phase of SYSGEN. During Phase III, you can task-build, or rebuild, any privileged or nonprivileged RSX-11M task. Figure 7-1 shows the logical flow of SYSGEN Phase III. You may find Phase III useful for rebuilding RSX-11M tasks that you have patched. You can also use Phase III to build RSX-11M tasks that are not available on the baseline system. Example 7-1 is an annotated terminal output from SYSGEN Phase III.

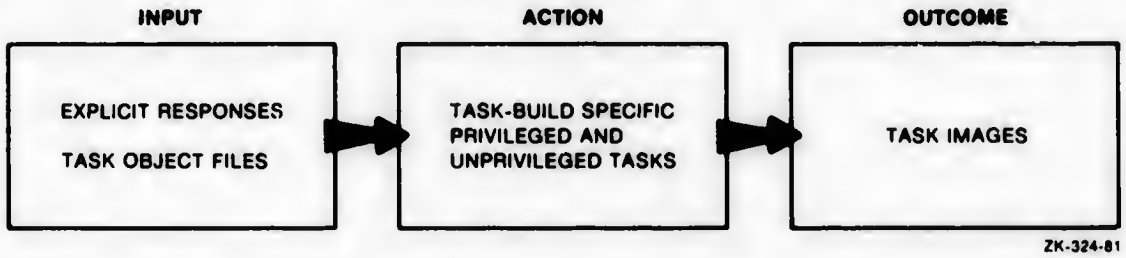

Figure 7-1 Logical Flow of SYSGEN Phase III

The Indirect command file that controls Phase III execution is SYSGEN3.CMD.

If your target system is unmapped (regardless whether it is a standard or a non-standard unmapped system), you have to build a few RSX-11M non-privileged tasks (PIP, TKB, and EDI) before you can use your new system. Also, if you specified during the Privileged Task-Build Section of Phase II that the base address for the GEN partition is other than the default base address of 40000, you can easily build RSX-11M tasks with the desired GEN partition base address during Phase III.

The distribution kits do not contain tasks linked to a resident FCS library (FCSRES). However, if your target system includes FCSRES, you can build nonprivileged tasks in Phase III to access FCSRES.

The following is a list of some of the tasks that you can link to FCSRES:

ACN	COT	EDT	HEL	MAC	PRT	STK
ACS	CRF	ELI	IOX	PAT	QMGCLI	TKB
CDA	DMP	FLX	LBR	PIP	QMG	VFY
CMP	EDI	FTB	LPP	PMD	SLP	ZAP

If you selected ANSI magtape support or support for big-buffering during Phase I and if you want the DMP, FLX, PIP, or VFY utilities to use this support, you must build those tasks during Phase III.

The task-build .CMD and .ODL files for RSX-11M tasks are not available on the distribution kit. Prior to task-building a task, SYSGEN3 dynamically creates the .CMD and .ODL files.

Phase III consists of a single section of questions.

7.1 PREPARING FOR PHASE III

Before beginning Phase III of SYSGEN, be sure you have done the following:

1. If you generated your system from an on-line V4.1 host system, set your UIC to [200,200], assign the logical device SY: to your baseline disk, and invoke SYSGEN3.CMD as follows:

```
>SET /UIC=[200,200]
>ASN ddu:=SY: (where ddu: is your baseline disk)
>MOU ddu: RSXM35
>@SYSGEN3
```

2. If you generated your system from a stand-alone V4.1 host system, bootstrap the target disk (see Appendix B), then invoke SYSGEN3.CMD as follows:

```
>SET /UIC=[200,200]
>@SYSGEN3
```

7.2 PHASE III QUESTIONS

*** 1. In what UIC is SGNPARM.CMD if not <uic> ? [S]:**

Enter the UIC containing the file SGNPARM.CMD. SGNPARM.CMD supplies Indirect symbol definitions from Phase I that are relevant to Phase III processing. SGNPARM.CMD provides a means of communicating between Phase I and the other phases of SYSGEN. SYSGEN creates this file in the UIC from which you invoked Phase I of SYSGEN.

SYSGEN replaces <uic> with the UIC from which you invoked Phase III of SYSGEN. Enter a different UIC to override this default, otherwise, press the RETURN key.

Some tasks are not available on the baseline system (such as BAD). If you wish to task-build a nonprivileged task for the baseline system, use the SGNPARM.CMD file for the baseline system in UFD [1,54].

*** 2. Are you building nonprivileged tasks? [Y/N]:**

If you are building any of the following nonprivileged tasks listed, respond Yes to this question:

BAD	CMP	EDI	FTB	PAT	STK
BRU	CRF	EDT	ICA	PIP	TKB
CDA	DMP	FLX	LBR	RPT	VFY
CFL	DSC	FMT	MAC	SLP	ZAP

NOTE

See the RSX-11M/RSX-11S Information Directory and Index to locate the appropriate documentation on these tasks. BRU is available only on mapped systems. EDT is available only on mapped systems with the full-duplex terminal driver.

*** 3. Enter device for <label> disk when it is ready (ddu:) [D: <default>] [S]:**

This question appears only if you are using an RL01/RL02 distribution kit.

To answer this question, enter the device mnemonic and unit number of the drive containing the object files disk requested. (SYSGEN replaces <label> with the volume name of the appropriate disk.)

If you are using an RL01/02 distribution kit and if you answered No to Question 2, SYSGEN replaces <label> with EXCPRV.

If you are using an RL01/02 distribution kit and you answered Yes to Question 2, SYSGEN replaces <label> with RLUTIL.

The default response (<default>) is the response entered for Question 17 of the Setup Section in Phase I.

*** 4. Enter map device (ddu:) [D: NL:]:**

Map listings are usually of little use if your target system is mapped. The map listings are more useful if your target system is unmapped and you need to determine the exact size of your tasks.

If you want the map listings, specify the desired output device as your response. If you specify a device other than LP:, SY:, LB:, TI:, TT:, or NL:, the device must be mounted and the UFD [1,34] for mapped systems or [1,30] for unmapped systems must exist.

The default output device for the map listings is NL: (the null device).

*** 5. Enter task name(s) [S]:**

Enter the names of those tasks that you wish to build. If you intend to build more than one task, separate the names of the tasks with a comma. You need not enter all the task names on one line. When you have entered the names of all tasks to be built, enter a period (.) to terminate input.

If you wish to build MCR for a multiuser system, enter MCM as the task name.

If you answered Yes to Question 2 to indicate that you intend to build nonprivileged tasks, you may enter an asterisk (*) to display a table of the nonprivileged tasks. Likewise, you may enter a percent sign (%) to indicate that you wish to build all of the nonprivileged tasks listed in the table.

NOTE

You may rebuild privileged tasks using SYSGEN3.CMD. However, you should not use Phase III for building all privileged tasks. If you intend to rebuild several (or all) privileged tasks, you should do so in Phase II.

*** 6. Use [1,1]FCSRES.STB when building those tasks? [Y/N]:**

If your target system includes the FCS resident library (FCSRES) and if you want your task(s) to link to that library, answer Yes to this question.

If you answer No, any tasks built during Phase III are not linked to the FCS resident library; instead each task contains all of the necessary FCS modules within the task image.

Tasks linked to the FCS resident library can only run on a system with that FCS resident library installed. Tasks built to link to FCSRES cannot run on the baseline system.

This question does not appear if you did not select the FCS resident library (FCSRES) in Question 3 of the System Options Section in Phase I.

*** 7. Use LB:[1,1]ANSLIB.OLB when building those tasks? [Y/N]:**

If your target system includes ANSLIB.OLB and if you want to build any tasks with ANSLIB, answer Yes to this question.

This question appears only if you are building DMP, FLX, PIP, or VFY and if you selected ANSI magtape support (Question 13 of the Executive Options Section in Phase I) or support for big buffering (Question 1 of the System Options Section in Phase I).

If you answer No to this question, any tasks you specify to be built for your target system are built with SYSLIB.OLB.

This question does not appear if your target system includes a resident FCS and does not include ANSLIB.OLB. See Question 3 of the System Options Section in Phase I for more information on the ANSI version of FCSRES.

*** 8. GEN's base address in 32 word blocks [0 D:400]:**

This question appears only for unmapped systems and only if you are building a task other than MCR, PRT, TKTN, FCPMIN, or FCPSML.

Enter the same base address for GEN that you specified in Phase II (Question 2 in the Privileged Task-Build Section). The base address for GEN starts on a 32(10) word boundary.

The default of 400 is based on the assumption that the highest location in memory allocated to the Executive does not exceed 40000 and that you intend to use nonprivileged tasks built to run in the GEN partition starting at location 40000 (for example, the default of 400 is correct for standard unmapped systems).

*** 9. SYSPAR's base address in 32 word blocks [0 D:<default>]**

This question appears only for unmapped systems and only if you are building MCR, TKTN, FCPMIN, or FCPSML.

Enter the same base address for SYSPAR that you specified in Phase II (Question 3 of the Privileged Task-Build Section). If the target system has 24K words or more of memory, the default (<default>) is 1300. The default is based on the assumption that you selected the default of 400 32-word blocks for the GEN partition and that you plan to include a 14K task partition (PAR14K) of which GEN is an 8K subpartition.

If the target system has less than 24K words of memory, the default base address is 1000. This default is based on the assumption that you have selected the default of 400 32-word blocks for the GEN partition and that GEN is an 8K partition.

The base address for SYSPAR starts on a 32(10) word boundary.

*** 10. SPLPAR's base address in 32 word blocks [0 D:<default>]:**

This question appears for unmapped systems only, and only if you are building the serial despooler task (PRT).

Enter the same base address for SPLPAR that you specified in Phase II (Question 4 of the Privileged Task-Build Section).

The base address of SPLPAR starts on a 32(10) word boundary. If you selected FCPMIN, the default response for this question can be calculated by adding 100 to the default base address of SYSPAR.

If you selected FCPSML, the default response for this question can be calculated by adding 120 to the default of Question 10 above.

*** 11. Pause to edit any task build .CMD or .ODL files? [Y/N]:**

If you answer Yes to this question, SYSGEN pauses to allow you to selectively edit the task-build .CMD or .ODL files. This is the logical place in SYSGEN to alter any task-build parameters if you need to do so. If you choose to edit any .CMD files, the information to edit a given file is contained in comments within that file.

*** 12. Delete task build .CMD and .ODL files after task building? [Y/N]:**

It is not necessary to keep the .CMD and .ODL files after they have been used to build their respective tasks. They can be easily recreated by reinvoking SYSGEN3.CMD. You can free the disk space occupied by these files by answering Yes to this question.

Example 7-1 Annotated Terminal Output from SYSGEN Phase III

```
>SET /UIC
UIC=[1,54]
>SET /UIC=[200,200]
>SET /UIC
UIC=[200,200]
>@SYSGEN3 (1)
>;
>; RSX-11M V4.1/RSX-11M-PLUS V2.1 System Generation Phase III -- version 2.0
>;
>; 21-FEB-83 19:37:49
>;
>*  1. In what UIC is SGNPARM.CMD if not in [200,200] [S]:
>;
>; RL01/RL02 distribution kit SYSGEN version 2.0 for RSX-11M BL35-A
>;
>; Continuation from SYSGEN PHASE I done on 21-FEB-83 at 17:25:46
>;
>*  2. Are you building nonprivileged tasks? [Y/N]: Y
>*  3. Enter device for RLUTIL device when it is ready (ddu:) [D: DL1:] [S]: DL1:
>MOU DL1:RLUTIL
>*  4. Enter map device (ddu:) [D: NL:] [S]:
>ASN SY:=LB:
>;
>;       For nonprivileged tasks:  * -- Prints the table of tasks
>;                                 % -- Builds all tasks
>;                                 . -- Terminates inquiry
>;
>;       Enter responses separated by commas.  All responses need
>;       not fit on one line.
>;
>; Example:  BAD,LBR,PIP,.
>;
>*  5. Enter task name(s) [S]: * (2)
>;
>;       Nonprivileged tasks:
>;
>;               BAD     BRU     CDA     CFL     CMP
>;               CRF     DMP     DSC     EDI     EDT
>;               FLX     FMT     FTB     IDX     LBR
>;               MAC     PAT     PIP     RPT     SLP
>;               STK     TKB     VFY     VMR     ZAP
>;
>*  5. Enter task name(s) [S]: BRU,EDT,LBR,PIP,
>*  5. Enter task name(s) [S]: TKB,VMR,ZAP,. (3)
>;
>; [1,1]FCSRES.STB can be used to build many tasks
>; so that those tasks link to the FCS resident library
>;
>*  6. Use [1,1]FCSRES.STB when building those tasks? [Y/N]: Y
>;
>; It is assumed that [1,1]FCSRES.STB is an ANSLIB version of the FCS
>; resident library
>;
>;
>; Note that tasks linked to the FCS resident library can only
>; run on a system with the FCS resident library installed.
>;
>* 11. Pause to edit any task build .CMD or .ODL files? [Y/N]: N
>* 12. Delete task build .CMD and .ODL files after task building? [Y/N]: Y
>SET /UIC=[1,24]
>;
>; Creating the task build .CMD and .ODL files in DL1:[1,24]
```

Example 7-1 (Cont.) Annotated Terminal Output from SYSGEN Phase III

```
>;
>INS SY:[1,54]TKB.TSK/1/TASK=...TKL
>TKL @DL1:[1,24]BRUBLD.CMD
>TKL @DL1:[1,24]EDTRESBLD.CMD
>TKL @DL1:[1,24]LBRRESBLD.CMD
>TKL @DL1:[1,24]PIPRESBLD.CMD
>TKL @DL1:[1,24]TKBRESBLD.CMD
>TKL @DL1:[1,24]VMRBLD.CMD
>TKL @DL1:[1,24]ZAPRESBLD.CMD
>REM TKL
>ASN =LB:
>;
>; Delete the task build .CMD and .ODL files
>;
>INS SY:$PIP
>PIP DL1:[1,24]BRUBLD.CMD/O/DE/NM,BRUBLD.ODL/O
>PIP DL1:[1,24]EDTRESBLD.CMD/O/DE/NM,EDTRESBLD.ODL/O
>PIP DL1:[1,24]LBRRESBLD.CMD/O/DE/NM,LBRRESBLD.ODL/O
>PIP DL1:[1,24]PIPRESBLD.CMD/O/DE/NM,PIPRESBLD.ODL/O
>PIP DL1:[1,24]TKBRESBLD.CMD/O/DE/NM,TKBRESBLD.ODL/O
>PIP DL1:[1,24]VMRBLD.CMD/O/DE/NM,VMRBLD.ODL/O
>PIP DL1:[1,24]ZAPRESBLD.CMD/O/DE/NM,ZAPRESBLD.ODL/O
>REM PIP
>SET /UIC=[200,200]
>@ <EOF>
>
```

Notes for the terminal output from SYSGEN Phase III (for a mapped target system):

❶ Invokes Phase III.

❷ When you enter an asterisk (*) as a response to Question 5, SYSGEN displays a list of the nonprivileged tasks that you can task-build.

❸ Enter the names of the tasks you want task-built for your target system, then terminate your input with a period.

The system generation procedure is now complete. You may want to make some adjustments to your system after you have had some time to use it. Appendix D may help you to adjust the amount of pool space your system needs. In addition, the RSX-11M/M-PLUS System Management Guide may also help you to optimize your system's performance.

CHAPTER 8

SYSGEN ERROR MESSAGES

All error messages from SYSGEN appear in this chapter in alphabetical order. The descriptions that follow each message explain the possible cause and, as necessary, suggest remedial action.

SGN -- You attempted to use non-existent default for parameter <parm> -- RETRY

Explanation: A required parameter was missing from the response to the current peripheral question. SYSGEN replaces <parm> with a number indicating the position in the prompt line of the missing parameter. Reenter the entire response. Note that the [L/R] parameter is not considered as one of missing parameters.

SGN -- Baseline terminal driver not valid option with multiuser protection selected

Explanation: The half-duplex baseline terminal driver includes no SYSGEN options and cannot execute in a multiuser protection system (for example, the breakthrough write option is required but not included). Choose a different terminal driver.

SGN -- CO driver not valid on RSX-11S systems

Explanation: RSX-11S systems cannot include the console driver (CO). SYSGEN ignores this entry.

SGN -- CO driver not valid on unmapped system

Explanation: Unmapped systems cannot include the console driver (CO). SYSGEN ignores this entry.

SGN -- Correct problems and reassemble the bad modules; SYSGEN will continue when done

Explanation: This message indicates that you detected an error in the Executive or device drivers assembly (you responded No at either the Executive or driver EOX breakpoint). After you correct the error, reassemble the bad modules and SYSGEN continues.

SGN -- Correct problems -- SYSGEN will restart assemblies when done

Explanation: This message indicates that you detected an error in assembling the laboratory peripheral devices. After you correct the error, SYSGEN attempts to reassemble the laboratory peripherals common area(s).

SGN -- DM11-BB CSR address must be greater than 157777 if specified -- RETRY

Explanation: If the system includes a DM11-BB, the CSR address must be greater than or equal to 160000. If DM11-BB is not included, the CSR address must be 0.

SGN -- DM11-BB vecto. address must be greater than 277 if specified -- RETRY

Explanation: If the system includes a DM11-BB, the interrupt vector address must be greater than or equal to 300. If DM11-BB is not included, the vector address must be 0.

SGN -- DU not valid on an unmapped system -- SUPPRESSED

Explanation: Unmapped systems cannot support the UDA50 (DU:). SYSGEN ignores this entry.

SGN -- Dynamic storage space must be in multiples of two words -- RETRY

Explanation: The system allocates pool in four-byte sections. Thus, the amount of pool must be a multiple of four bytes.

SGN -- EDT only built for mapped systems with a full-duplex terminal driver.

Explanation: You must be generating a mapped system with a full-duplex terminal driver to include EDT in your target system. Otherwise, SYSGEN does not build the task.

SGN -- FCP <fcp> not valid on an unmapped system -- RETRY

Explanation: The FCP indicated is not available on unmapped systems. SYSGEN reprompts for different FCP.

SGN -- File <file>.BLD does not exist

Explanation: SYSGEN cannot find the specified task's .BLD file, which SYSGEN needs to dynamically create the .CMD and .ODL files for that task.

SGN -- GR not valid on system with more than 124K -- SUPPRESSED

Explanation: The graphics display driver (GR) does not execute on 22-bit processors. If your system includes a GR, the maximum amount of memory is 124K. If you have a GR and wish to use it, type CTRL/Z and restart your system generation specifying 124K or less for memory size.

SGN -- Illegal character in numeric response -- RETRY

Explanation: A character other than 0 through 7 for an octal response or 0 through 9 for a decimal response was entered. Note that the use of special characters (# or .) to indicate an explicit octal or decimal response is forbidden.

SGN -- Illegal device mnemonic -- RETRY

Explanation: You specified a drive type that the device does not support (such as an RP06 for a DL device).

SGN -- Illegal numeric answer -- RETRY

Explanation: See the description of illegal character in numeric response.

SGN -- Illegal printer specification -- Valid types are LP11-A, B, C, D, E, F, H, J, K, R, S, V, W, Y, Z, LS11, LA180, LN01, and LV11 -- RETRY

Explanation: SYSGEN only supports the line printer controllers listed. If you have a different controller, refer to the Peripheral Options question concerning LP: to match your printer characteristics with a DIGITAL printer.

SGN -- Illegal trailing characters or extra parameters "parm" -- RETRY

Explanation: You have specified more parameters than allowed for this response. Note that parameters in brackets can only be specified for the first controller of this type.

SGN -- Indirect Command Processor error encountered in <file>.BLD

Explanation: SYSGEN encountered an error while processing the specified .BLD file. The .CMD and .ODL files created by the .BLD file may not have been created correctly.

SGN -- Input saved answer file <file> does not exist -- RETRY

Explanation: Either the indicated input saved answer file does not exist, or SYSGEN had a problem referencing the file. SYSGEN repeats Setup Question 8.

SGN -- Invalid directive code <direc-code>

Explanation: You have entered other than A, B, C, D, E, F, G, H, I, J, K, or L. The line is discarded.

SGN -- Invalid FCP code <fcp code> entered -- RETRY

Explanation: You have entered an FCP code other than A, B, C, D, or E. SYSGEN reprompts for a valid FCP code.

SGN -- Invalid system device -- RETRY

Explanation: The device specification for the Executive source disk was incorrectly entered.

Big disk kits: The default response is SY:; enter either Y or press the RETURN key. Otherwise, you must enter at least two characters to identify the device that contains the Executive sources.

RL01 kits: There is no default response to this question. Enter at least two characters to identify the device that contains the Executive sources.

SGN -- Listing files cannot be sent directly to LP: -- RETRY

Explanation: Spooled listings must go to a spool device. Also, for on-line SYSGENs, maps cannot be spooled directly to the line printer. If you want to print at LP:, specify LP0:.

SGN -- Loadable driver support was not selected in the Executive section of SYSGEN. Device cannot be made loadable -- RETRY

Explanation: You did not include loadable driver support in the system. All device drivers must be resident.

SGN -- Loadable/Resident indication not valid for this device -- RETRY

Explanation: Loadable or resident is not an option for this device.

SGN -- Mapping option of the input saved answer file is different from the mapping option selected in Question 5

Explanation: The mapping option that you specified in Question 5 of the Phase I Setup Section conflicts with the mapping option in the input saved answer file. For instance, your response to Question 5 may indicate that you want to generate an unmapped system, but the input saved answer file indicates a mapped system.

Reinvoke SYSGEN and select an input saved answer file that corresponds to the type of system (mapped or unmapped) that you indicated in Setup Question 5.

SGN -- Maps cannot be sent directly to line printer -- RETRY

Explanation: Spooled maps must first go to a spool device. Also, for on-line SYSGENs, the maps cannot be spooled directly to the line printer (specify LP0:).

SGN -- Maximum of 1 CRT monitor possible with VT11 -- RETRY

Explanation: A VS60 can support two CRT monitors, but a VT11 supports only one.

SGN -- Maximum of 8 printers allowed on a system with a KMC -- RETRY

Explanation: The KMC-11 supports up through eight line printers.

SGN -- Maximum of <nn>. controllers allowed for device dd -- RETRY

Explanation: The specified device supports <nn> controllers. Note that pseudo devices can only indicate one controller. Terminal driver controllers are specified later.

SGN -- Memory management and loadable drivers options support needed to include DHV11 support

Explanation: You tried to include DHV11 support without first including full-duplex terminal driver support (Question 1, Option C in the Terminal Driver Options Section) which requires memory management support (Question 5 in the Setup Section) and loadable drivers options support (Question 15 in the Executive Options Section).

Restart SYSGEN using the saved answer file you just created ($SA0) and include memory mangement support and loadable drivers support.

SGN -- Memory size inconsistent with mapping option

Explanation: The maximum memory size for an unmapped system is 28K words. The minimum memory size for a mapped system is 24K words. You have either specified more than 28K words of memory for an unmapped system (Question 3 in the Target Configuration Section) or less than 24K words of memory for a mapped system.

SGN -- Memory not multiple of 4K

Explanation: When you specify memory size, it must be a multiple of 4.

SGN -- More than 252. modules specified -- RETRY

Explanation: The UDC-11 supports a maximum of 252 modules. You have specified more than the maximum.

SGN -- Number of interrupts must be divisible into 10,000

Explanation: The number of interrupts per second for the KW11-P clock was not 1, 2, 4, 5, 8, 10, 16, 20, 25, 40, 50, 80, 100, 125, 200, 250, 400, 500, 625, 1000, 1250, 2000, 2500, or 5000.

Note that more than 100(10) clock interrupts per second significantly increases system overhead.

SGN -- Number of samples must be evenly divisible into 10000. -- RETRY

Explanation: Sampling rate must be evenly divisible into 10000.

SGN -- Overlapping modules -- RETRY

Explanation: The last module specified attempts to use slots that you have indicated as occupied by other modules.

Review your configuration and try again.

SGN -- Parameter (#n) <parm> out of range <min> to <max> -- RETRY

Explanation: The indicated parameter (excluding Loadable/Resident) is not within the acceptable range.

SGN -- Pausing to allow editing of Executive source

Explanation: This is not an error message; the message is informative. It appears when you indicate you wish to edit Executive files.

SGN -- Procedure can only be executed under the ICP.TSK version of the Indirect Command Processor

Explanation: The Indirect Command Processor presently running is ICQ.TSK and has limited capability. SYSGEN exits under this condition.

Remove AT., install ICP.TSK (the version of the Indirect Command Processor with the capability required for system generation), then reinvoke SYSGEN.

SGN -- Procedure can only be run from MCR or DCL

Explanation: The Indirect command procedure has been invoked from a user-written CLI. SYSGEN exits under this condition.

Set your terminal to either MCR or DCL and reinvoke SYSGEN.

SGN -- Saved answer file for a Standard Function System (SGNSTAND.CMD) does not exist

Explanation: Either the saved answer file SGNSTAND.CMD does not exist in the current UFD on the SY: disk, or SYSGEN has a problem referencing it. SYSGEN repeats Setup Question 8 under this condition.

SGN -- Standard Function System requires at least 96K words of memory

Explanation: You cannot generate the Standard Function System because the target system does not have sufficient memory. SYSGEN exits under this condition.

Reinvoke SYSGEN but do not choose the Standard Function System.

SGN -- String <string> ignored

Explanation: The <string> portion of the response to Question 5 of Phase III is invalid. SYSGEN ignores that part of your response.

SGN -- SYSGEN encountered an unrecoverable error within the module <module>

Explanation: SYSGEN encountered an unrecoverable error within the module <module>.

Submit an SPR for the problem and include a hardcopy listing of the SYSGEN dialog, as well as the saved answer file that was created from SYSGEN.

SGN -- Task <task> is not built for unmapped systems

Explanation: SYSGEN cannot build the indicated task for an unmapped system. The task is valid on mapped systems only.

SGN -- The full-duplex terminal driver requires memory management and loadable driver support. If you desire the full-duplex driver, you must repeat the Executive questions and select these options.

Explanation: As the message states, you must include memory management support and loadable driver support to select the full-duplex terminal driver.

SGN -- Unit number must be an integer in the range 0 to 7

Explanation: The crash device must be a unit number 0 through 7.

SGN -- Unrecognizable string "ddn" -- Ignored

Explanation: SYSGEN could not parse the indicated string. Perhaps you omitted a comma.

SGN -- Valid character detection expander unit indicators are "C" (yes) and "NO" (no) -- RETRY

Explanation: Valid responses for this parameter are C to indicate that the controller includes a character unit and NO to indicate that it does not.

SGN -- Valid D/A present indicators are "D" (yes) and "NO" (no) -- RETRY

Explanation: Valid responses for this parameter are D, to indicate that the controller includes a D/A converter and NO to indicate that it does not.

SGN -- Valid devices: DT, DK, MT, MS, MM, DB, DM, DL, DD, DR, DU, DX, and DY -- RETRY

Explanation: The Executive crash module does not support the device you entered as a dump device.

SGN -- Valid DR11-K present indicators are "DRK" (yes) and "NO" (no) -- RETRY

Explanation: Valid responses for this parameter are DRK to indicate that DR11-K is present and NO to indicate that it is not.

SGN -- Valid duplex indicators are "H" and "F" -- RETRY

Explanation: Valid responses for this parameter are H, to indicate a half-duplex line and F to indicate a full-duplex line.

SGN -- Valid error detection expander unit indicators are "E" (yes) and NO (no) -- RETRY

Explanation: Valid responses for this parameter are E to indicate that the error detection expander unit is present and NO to indicate that it is not present.

SGN -- Valid indicators are "H", "F", and "P" -- RETRY

Explanation: Valid responses for this parameter are H to indicate a half-duplex line, P to indicate primary station of line, and F to indicate a full-duplex line.

SGN -- Valid graphic device indicators are "VT11" and "VS60" -- RETRY

Explanation: Valid responses for this parameter are VT11 to indicate a VT11 graphics display device and VS60 to indicate a VS60 graphics display device.

SGN -- Valid line speeds are 50, 75, 110, 134.5, 150, 200, 300, 600, 1200, 2400, 4800, and 9600 -- RETRY

Explanation: The DH11 controller does not support the specified line speed.

SGN -- Valid line speeds are 75, 110, 134.5, 150, 300, 600, 1200, 1800, 2000, 2400, 4800, 9600, and 19200 -- RETRY

Explanation: The DHV11 controller does not support the specified line speed.

SGN -- Valid offset recovery indicators are "O" (yes) and "NO" (no) -- RETRY

Explanation: Valid responses for this parameter are O to indicate that all controllers of this type support offset recovery, and NO to indicate that none of the controllers of this type support it.

SGN -- WARNING -- Console terminal interface (YL) forced into system

Explanation: RSX-11M requires a terminal interface for operation. You failed to specify a terminal interface in your system, so SYSGEN included the console terminal interface (YL) for you.

SGN -- WARNING -- CPU does not have switch register -- Get sense switch directive not included

Explanation: The processor you specified does not have a switch register. Thus, you cannot use the Get Sense Switch directive.

SGN -- WARNING -- Input saved answers for Phase <n> may be incomplete

Explanation: The saved answer file presently being used for input to SYSGEN does not contain answers for all of the questions in either Phase I or Phase II. (The error message specifies the exact phase of SYSGEN that was preempted.) Therefore, SYSGEN prompts you for input to those questions that do not have saved responses.

SGN -- WARNING -- Null device forced into system

Explanation: This message indicates that SYSGEN has forced the null device into your configuration. The null device is required to redirect data normally sent to either the system disk or the terminal driver (both of which your system does not include).

APPENDIX A

SAVED ANSWER SYMBOLS

This appendix lists all of the possible symbols that could be created during SYSGEN and stored in your saved answer file. At some time you may wish to examine a previously generated saved answer file to see which options you included or excluded.

Following each symbol listed below is a key indicating the exact SYSGEN section and question number associated with the symbol and the text of the specific SYSGEN question. The exact text of the question is not always given below when it is more helpful to expand the text.

The legend below defines the keys used to identify the SYSGEN phase and question number associated with each symbol. For example, the key SO-4, following the symbol $FCP, indicates that the symbol $FCP is associated with Question 4 in the System Options Section of SYSGEN Phase I.

Legend:

S	Setup Questions Section (Phase I)
TC	Target Configuration Section (Phase I)
HC	Host Configuration Section (Phase I)
E	Executive Options Section (Phase I)
TT	Terminal Driver Options Section (Phase I)
SO	System Options Section (Phase I)
EB	Exec TKB Section (Phase II)
DB	Loadable Driver Build Section (Phase II)
TB	Privileged TKB Section (Phase II)
V	System VMR Section (Phase II)

Symbol	Key	Definition
$MAP		Is the system mapped (True) or unmapped (False)?
$TPR	TC-1	Processor Type
$SWR	TC-2	Does the processor have a switch register?
$TME	TC-3	Memory size (in K-word blocks)
$KSR	TC-4	Include support for K-series devices?
$EAE	TC-5	Extended arithmetic element (KE11-A/B EAE) present?
$FPP	TC-6	Floating point processor (FP11) present?

SAVED ANSWER SYMBOLS

Symbol	Key	Definition
$FIS	TC-7	Floating instruction set (FIS) present?
$EIS	TC-8	Extended instruction set (EIS) present?
$PRO	TC-9	Number of KW-11P clock interrupts per second
$LIN	TC-10	Line frequency: A-60Hz B-50Hz
$WAT	TC-11	KW11-Y Watchdog timer support?
$MPR	TC-12	Memory parity support?
$CAH	TC-13	Cache memory support?
$HIV	TC-14	Highest interrupt vector
$DEV	TC-15	Peripheral devices and number of controllers
$DV2	TC-15	Peripheral devices and number of controllers
$DV3	TC-15	Peripheral devices and number of controllers
$LPR	HC-1	Is a line printer available?
$SPL	HC-2	Spool assembly listings and Executive and driver maps?
$PWI	HC-3	Does the listing/map device have at least 120 columns?
$ALD	HC-4	Assembly listing file device
$MPD	HC-5	Map device for Executive and device drivers
$DBM	E-1	Include support for DBMS-11?
$F11	E-2	FILES-11 ACP supported?
$RMS	E-3	RMS bucket locking (file sharing) and placement control?
$NRT	E-4	Non-resident tasks (task loader) supported?
$LLR	E-5	Loadable task loader supported?
$DRC	E-6	Executive Common support?
$MMD	E-7	Memory management (PLAS) directives supported?
$SRR	E-8	Send/Receive By Reference directives supported?
$GMC	E-9	Get Mapping Context directive supported?
$ACK	E-10	Address checking supported?
$IOR	E-11	I/O rundown supported?
$MUP	E-12	Multi-user protection supported?
$ANM	E-13	ANSI magtape support?
$OUD	E-14	Online formatting (FMT) and diagnostic QIOs supported?

Symbol	Key	Definition
$LOD	E-15	Loadable device drivers supported?
$LLD	E-16	Is the default for drivers loadable or resident?
$AST	E-17	Include Asynchronous System Trap (AST) support?
$CSM	E-18	Include Cancel Selective Marktime support?
$TKT	E-19	Support task termination and device not ready messages?
$PRF	E-20	Support power fail recovery?
$IRR	E-21	Support install, request and remove on exit (MCR RUN)?
$20K	E-22	Large (20K) Executive supported?
$LGD	E-23	Logical device assignment supported?
$ERL	E-24	Include support for error logging?
$UWD	E-25	Do you intend to include a user-written driver?
$GTW	E-26	Include the $GTWRD (get word) Executive routine?
$PTW	E-27	Include the $PTWRD (put word) Executive routine?
$WCH	E-28	Disk writecheck supported?
$SWL	E-29	Software write-lock supported?
$XDT	E-30	Executive Debugging Tool (XDT) supported?
$ROT	E-31	Rotating pattern in data lights supported?
$NET	E-32	Communications products supported?
$DMA	E-33	System-controlled partitions supported?
$AMC	E-34	Include support for the Shuffler?
$PRN	E-35	Queue manager and queued print spooler supported?
$GGE	E-36	Group global event flags supported?
$DRR	E-37	Supported system directives: See the documentation of Question 37 for the relationship between the directives and the associated letter codes.
$NPK	E-38	Number of pre-allocated QIO packets
$DTV	E-39	Size of the data transfer vector in words
$RRS	E-40	Round-robin scheduling interval in ticks A value of 0 excludes the round-robin scheduler
$HIC	E-41	Highest priority class for round-robin scheduling

Symbol	Key	Definition
$LOC	E-42	Lowest priority class for round-robin scheduling
$DKS	E-43	Executive level disk swapping interval
$SWP	E-44	Swapping priority
$DSA	E-45	Size of the dynsmic storage region (pool) in words
$PNR	E-46	Seconds between printer not ready messages
$CRR	E-47	Seconds between card reader not ready messages
$RSD	E-48	System crash register and stack dump device CSR
$CHK	E-49	Checkpointing?
$DYN	E-50	Checkpointing with system checkpoint file?
$CRA	E-51	Type of crash dump analysis: A-PANIC B-CDA
$NOT	E-52	CDA output notification device CSR
$MDD	E-53	CDA memory dump device mnemonic
$MDC	E-54	CDA memory dump device CSR
$PDD	E-55	PANIC memory dump device CSR
$RTE	E-56	RT-11 emulation support?
$TTY	TT-1	Terminal driver desired: Consult documentation for Question 1 for letter code and associated terminal driver.
$TMN	TT-2	Unsolicited input timeout value in seconds
$FRM	TT-3	Pass form feeds directly to the terminal?
$ACR	TT-4	Automatic carriage return/line feed?
$TCK	TT-5	Task checkpointable during terminal input?
$USC	TT-6	Unsolicited input character AST supported?
$CNO	TT-7	Write with CTRL/O cancellation supported?
$BWS	TT-8	Breakthrough write supported?
$CNR	TT-9	CTRL/R retype supported?
$ESC	TT-10	Escape sequence handling?
$MLC	TT-11	Support for get multiple characteristics?
$SMC	TT-12	Support for set multiple characteristics?
$GTD	TT-13	Support for get terminal driver options?
$HSM	TT-14	Hold screen mode supported?

Symbol	Key	Definition
$TRW	TT-15	Transparent read/write supported?
$SCC	TT-16	Settable case conversion for input supported?
$RAP	TT-17	Support for read after prompt?
$RNE	TT-18	Support for read with no echo?
$RST	TT-19	Support for read with special terminator?
$RUB	TT-20	CRT rubout support?
$THS	TT-21	CTRL/S and CTRL/Q supported?
$TIB	TT-22	Support for user terminal input buffering?
$VTB	TT-23	Support for variable length terminal input buffering?
$L30	TT-24	LA30P supported?
$HRE	TT-25	Support hardware unrecoverable input error notification?
$DIC	TT-26	Support device independent cursor positioning?
$BBF	SO-1	ANSLIB.OLB desired for Big-buffering?
$ISA	SO-2	Build the library of ISA FORTRAN industrial/lab routines?
$FRL	SO-3	Build the PLAS resident FCS?
$FCP	SO-4	Code for FCP Consult documentation for Question 3 for letter code and associated version of F11ACP.
$PMD	SO-5	Post Mortem Dump (PMD) supported?
$RMD	SO-6	Resource Monitoring Display task (RMD) supported?
$PRT	SO-7	Non-queue manager print spooler (PRT) supported?
$DCL	SO-8	Digital Command Language (DCL) supported?
$NUC	SO-9	Number of user-written CLIs:
$PMT	SO-10	Support for pool monitoring/low pool recovery (PMT)?
$NOD	SO-11	System name (up to 6 alphanumeric characters)
$SPM	SO-12	Do you want SPM-11 support?
$LEM	EB-1	List executive map?
$LDM	DB-3	Device mnemonic for loadable driver maps
$BAD	DB-4	Build all selected loadable drivers into DRVPAR?

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Symbol	Key	Definition
$LDxN	DB-5	Loadable driver 2-character device mnemonic
$LDxP	DB-6	Loadable driver partition name
$LDxB	DB-7	Loadable driver x partition base address
$PRM	TB-1	Device mnemonic for privileged task maps
$GPS	TB-2	GEN's base address
$SPB	TB-3	SYSPAR's base address
$PPB	TB-4	SPLPAR's base address
$EDF	TB-5	Pause to edit any task build .CMD or ODL files?
$DFL	TB-6	Delete task build .CMD and .ODL files after task building?
$ERV	V-1	Edit SYSVMR.CMD?

APPENDIX B

HARDWARE BOOTSTRAP PROCEDURES

Bootstrapping a device involves using the central processor unit (CPU) console switches to initiate a hardware loader. The hardware loader contains machine instructions for reading a special record from the device. The record, called a bootstrap record, is transferred into memory and executes a specially designed software program. For the bootstrap operation to succeed, the device accessed must be on line and ready; the medium accessed must contain a proper bootstrap record; and the console terminal must be on line.

The PDP-11 console switches and their use are described in the Processor Handbook. The bootstrap procedure that you should use depends upon the type of hardware bootstrap device on the system. Table B-1 summarizes the addresses needed to bootstrap each device. The detailed procedures to bootstrap a device are presented according to the types of hardware bootstrap devices available.

B.1 GENERAL BOOTSTRAPPING PROCEDURE

The following procedures give a general description of the steps necessary to hardware bootstrap a magnetic tape and a disk, respectively.

To bootstrap a magnetic tape:

1. Physically mount the magnetic tape (for instance, the stand-alone BRU64K tape) on unit 0, with the write-enable ring removed.

2. Ensure that the tape is at its load point. (The BOT indicator light comes on.) The CPU does not bootstrap the device unless the tape is at its load point.

3. Set the ON-LINE/OFF-LINE switch on the tape unit to ON-LINE, and ensure that the RDY indicator is lit.

4. Ensure that the console terminal is on line.

5. Follow the bootstrap instructions (in this appendix) for the particular bootstrap you must use.

To bootstrap a disk volume:

1. Insert the disk volume (for instance, the baseline disk RSXM35) in a free unit.

2. Ensure that the RDY light is on.

3. Ensure that the console terminal is on line.

4. Follow the bootstrap instructions (in this appendix) for the particular bootstrap you must use.

Table B-1
Summary of Hardware Bootstrap Addresses

	Bootstrap Type					
Device to Bootstrap	MR11-DB	M9301-YA	M9301-YB	M9301-YC	M9301-YF	M9312
RF11 disk	773100					
RS03/RS04 disk		DS	DS	100	DS	DS
RK05 disk cartridge unit 0	773110	DK	DK	30	DK	DK
RP02 or RP03 disk pack unit 0	773154	DP	DP	40	DP	DP
RP04, RP05, or RP06 disk pack unit 0		DB	70	DB	DB	
RK05 disk (unit n)		DKn	DKn	30+n	DKn	DKn
RL01/RL02 disk unit n						DLn
RK06 disk (unit n)					DMn	DMn
RK07 disk (unit n)						DMn
RP02 or RP03 disk pack (unit n)		DPn	DPn	40+n	DPn	DPn
RP04, RP05, RP06, RM02, RM03, RM05, RP07, or RM80 disk (unit n)			DBn	70+n	DBn	DBn
RA60/80/81, RC25						DUn
TU10/TE10 and TS03 magnetic tape	773136	MT	MT	10	MT	MTn
TS11 magnetic tape						MSn
TU16/TE16/TU45 /TU77 magnetic tape			MM	60	MM	MMn
TU56 DECtape	773120	DT	DT	20	DT	DTn

B.2 MR11-DB PROCEDURE

If the MR11-DB Bulk Storage Loader is on the system, perform the following steps:

1. Move the CPU console ENABLE/HALT switch to its HALT position and back to its ENABLE position.

2. Set the CPU switch register to one of the following values:

   773100 for RF11 disk
   773110 for RK05 disk cartridge
   773154 for RP03 disk pack
   773136 for TU10/TE10/TS03 magnetic tape

3. Press the CPU LOAD ADRS switch.

4. Press the CPU START switch.

B.3 M9301-YA AND M9301-YB PROCEDURE

If the M9301-YA or M9301-YB Bootstrap Terminator is on the system, perform the following steps:

1. While holding down the CTRL switch, press the BOOT switch on the front of the CPU.

   The bootstrap prints the contents (in octal) of registers R0, R4, the stack pointer, and the program counter at the console terminal. It then prints a prompting character ($).

2. In response to the prompting character, type the 2-character device code and the unit number of the device to be bootstrapped. Terminate your response by pressing the RETURN key. Table B-2 describes the device codes.

Table B-2
Device Codes for M9301-YA and M9301-YB Bootstraps

Device	Code
TU10/TE10/TS03 magnetic tape	MT
TU16/TE16/TU45/TU77 magnetic tape[1]	MM
RK05 Disk cartridge	DK
RP02/RP03 disk pack	DP
RP04/RP05/RP06/RM02/RM03 disk pack[1]	DB
RS03/RS04 fixed head disk[1]	DS

1. M9301-YB Bootstrap Terminator only.

B.4 M9301-YC PROCEDURE

If the M9301-YC bootstrap is on the system, perform the following steps:

1. Move the CPU ENABLE/HALT switch to its HALT position and back to its ENABLE position.
2. Set the start address of 17765000 with the console switches.
3. Press the CPU LOAD ADDR switch.
4. Set the device unit number with switches 0 through 2.
5. Set the device code for the device to be bootstrapped in switches 3 through 6. Table B-3 lists the device codes.

Table B-3
Device Codes for the M9301-YC Bootstrap

Device	Code
TU10/TE10/TS03 magnetic tape	1
RK05 disk cartridge	3
RP02/RP03 disk pack	4
TU16/TE16/TU45/TU77 magnetic tape	6
RP04/RP05/RP06/RM02/RM03 disk pack	7
RS03/RS04 fixed head disk	10

6. Ensure that switches 7 through 21 are off (down).
7. Press the CPU START switch.

NOTE

Before the M9301-YC bootstrap actually bootstraps the system, it performs CPU tests, instruction and addressing tests, and memory and cache tests. If a hardware failure is detected, the diagnostic program halts. The lights contain the ROM address of the halt. If this occurs, call the DIGITAL field service engineer.

It may, however, be possible to continue with the bootstrap operation if the lights contain the address 1773764, which indicates a cache failure. To continue in this case, press CONT. This is the only case in which it is possible to continue bootstrapping after the diagnostic detects an error.

B.5 M9301-YF PROCEDURE

If the M9301-YF Bootstrap Terminator is on the system, perform the following steps:

1. While holding down the CTRL switch, press the BOOT switch on the front of the CPU.

2. The bootstrap prints the contents (in octal) of registers R0, R4, the stack pointer, and R5 at the console terminal. It then prints a prompting character.

3. In response to the prompting character, type the 2-character device code and unit number of the device to be bootstrapped. Terminate your response by pressing the RETURN key. Table B-4 lists the device codes.

Table B-4
Device Codes for the M9301-YF Bootstrap

Device	Code
TU10/TE10/TS03 magnetic tape	MT
TU16/TE16/TU45/TU77 magnetic tape	MM
RK05 disk cartridge	DK
RK06/RK07 disk cartridge	DM
RP02/RP03 disk pack	DP
RP04/RP05/RP06/RM02/RM03 disk pack	DB
RS03/RS04 fixed head disk	

B.6 M9312 PROCEDURE

The M9312 contains independent programs that can bootstrap programs into memory from a selected peripheral device. Through front panal control or folowing power-up, the computer can execute a bootstrap directly, without manual keying of the initial program. The M9312 contains four sockets for peripheral bootstrap loader programs encoded in ROMs. The choice of ROMs is determined by the system configuration.

After execution of the CPU diagnostics, the M9312 turns control of the system over to the user at the console terminal. The system prints out status information and is ready to accept simple user commands for checking and modifying information within the computer, starting a program already in memory, or executing a device bootstrap.

If the M9312 Bootstrap Terminator is on the system, perform one of the following procedures:

- If you have the M9312 Console Emulator on the system, follow the procedures in Section B.10.1 (PDP-11/60s and PDP-11/70s usually do not have console emulators). If that procedure does not work, perform the next step to verify that you have a console emulator.

- If you have a CPU equipped with switch registers and do not know what devices the M9312 will boot, perform the procedures in Section B.10.2.

- If you have a CPU equipped with switch registers, know what device ROMs are on the M9312 Bootstrap Module, but do not have a console emulator, follow the procedures in Section B.10.3.

- If you do not have the M9312 Bootstrap Terminator on your system and need to boot the RL01, R102, or the RK07 disk device, perform the manual load routine described in Section B.7.

B.6.1 Using M9312 Console Emulator

The M9312 Console Emulator can be initiated in two ways depending on the type of CPU (push button or switch register) on the sytem.

B.6.1.1 Push-Button Boot using the M9312 Console Emulator

1. While holding down the CTRL button, press the BOOT button on the CPU.

   The bootstrap prints the contents (in octal) of registers R0, R4, the stack pointer, and R5 at the console terminal. It then prints a prompting character.

2. In response to the prompting character, type the 2-character device code and the unit number of the device to be bootstrapped. Terminate your response by pressing the RETURN key. If the unit number is not entered, it is assumed to be zero. Table B-5 lists the device codes.

B.6.1.2 Switch Register Boot using the M9312 Console Emulator

1. Move the CPU console ENABLE/HALT switch to its HALT position then back to its ENABLE position.

2. Set the CPU switch register to 765020.

3. Press the START switch. The bootstrap prints the contents (in octal) of registers R0, R4, the stack pointer, and R5 at the console terminal. It then prints a prompting character (@).

Table B-5
Device Names and Mnemonics

Device To Be Booted	Mnemonic	Unit	Octal Data
RL01	DL	0-3	042114
RK06/RK07	DM	0-7	042115
RX01	DX	0-1	042130
RX02	DY	0-1	042131
RS03/RS04	DS	0-7	042123
RP02/RP03	DP	0-7	042120
RP04/RP05/RP06 RM02/RM03/RM05 RM80/RP07	DB DB[1]	0-7	
RA60/RA80 RA81/RC25	DU	0-7	042125
RK03/RK05	DK	0-7	042113
TU55/TU56	DT	0-7	
TS11	MS	0-7	046523
TU16/TE16/ TU45/TU77	MM	0-7	046515
TU10/TE10/TS03	MT	0-7	046524
Console Emulator CPU ROM	A0	N/A	040460
Diagnostic ROM PDP-11/60/70	B0	N/A	041060 177776[2] XXX777[3]

1. Type DB rather than DR if you are booting the RM02, RM03, RM05, RM80, or RP07 disk.

2. This is a continuation ROM of a multiple ROM boot.

3. Bad ROM or NO ROM present.

4. In response to the prompting character type, the 2-character device code and the unit number of the device to be bootstrapped. Terminate your response by pressing the RETURN key. The prompting character returns at this point if the correct boot ROM was not installed, or if a nonexistent device code is entered. If the contents of the registers R0, R4, stack pointer, and R5 appear before the prompting character, this indicates that at least one boot ROM socket is empty and it can accommodate another boot ROM.

   If the unit number is not entered, it is assumed to be zero. Table B-5 lists the device codes.

Successful completion of the switch register bootstrap procedure produces header information on the console terminal, similar to the example given for the Push Button Boot. After the message appears, begin the system generation process.

B.7 BOOTSTRAP LOAD PROGRAM FOR THE RL01/02 AND RK07

To bootstrap an RL01, RL02, or RK07 device when the system does not have the M9312 Bootstrap Module, you must manually enter a bootstrap load ROUTINE using the CPU console. The following procedure describes the manual load process for the PDP-11/34 (a similar procedure is followed using the CPU LOAD ADRS, DEP, and EXAM switches for the PDP-11/70 computer):

1. While holding down the CTRL button, press the HLT/SS button on the CPU.
2. Set address 1000 in the console register by using the numbered console buttons.
3. Press the LAD (load address) button.
4. Press the CLR button to clear the register.
5. Load the contents that appears in Table B-6 into memory using the numbered buttons and the DEP button. Press the CLR button after you have placed the contents in the CPU register and pressed the DEP button.

After the contents are loaded, perform the following steps:

1. Set address 1000 in the console register again by using the numbered buttons.
2. Press the LAD (load address) button.
3. While holding the CTRL button down, press the START button on the CPU to boot the device.

You can verify the accuracy of the load ROUTINE by using the CPU EXAM button. Set address 1000 in the console register register and press the LAD button. Press the EXAM button to reveal the contents of address 1000. It should be 12700 for both the RL01, RL02, and RL07 routines. Continue to press the EXAM button to check the contents of the remaining addresses in the load ROUTINE. Use the LAD and the DEP buttons to correct any erroneous contents.

Table B-6
RL01/02 and RK07 Load Routines

	RL01/RL02 Bootstrap Routine	RK07 Bootstrap Routine
Address	**Contents**	**Contents**
1000:	12700	12700
1002:	174400	177440
1004:	12760	12760
1006:	13	0[1]
1010:	4	10
1012:	12701	12701
1014:	4[2]	2003[3]
1016:	10110	10110
1020:	105710	105710
1022:	100376	100376
1024:	12760	12760
1026:	177601	177400
1030:	4	2
1032:	5721	62701
1034:	10110	16
1036:	105710	10110
1040:	100376	105710
1042:	12760	100376
1044:	177400	5710
1046:	6	100001
1050:	5060	0
1052:	4	5007
1054:	62701	
1056:	6	
1060:	10110	
1062:	105710	
1064:	100376	
1066:	5710	
1070:	100001	
1072:	0	
1074:	5007	

1. Select drive number 0 through 7 for the RK07.

2. Load 4 for unit 0, 404 for unit 1, 1004 for unit 2, and 1404 for unit 3.

3. Load 3 for RK06.

B.8 BOOTSTRAP LOAD PROGRAM FOR THE TU10, TE10, OR TS03

To bootstrap a TU10/TE10/TS03 magnetic tape when the system does not have a bootstrap that handles it, you must manually enter a load ROUTINE into memory using the CPU console switch register and the DEP switch.

To load the routine, perform the following steps:

1. Move the CPU console ENABLE/HALT switch to its HALT position and back to its ENABLE position.

2. Set the CPU switch register to 010000.

3. Press the CPU LOAD ADRS switch.

4. Load the following contents into memory using the Switch Register and DEP switch.

Address	Contents
010000	012700
010002	172524
010004	005310
010006	012740
010010	060011
010012	105710
010014	100376
010016	005710
010020	100767
010022	012710
010024	060003
010026	105710
010030	100376
010032	005710
010034	100777
010036	005007

5. Set the console switch register to 010000.

6. Press the CPU LOAD ADRS switch.

7. Press the CPU START switch.

If the system reads the tape but halts at address 010034, the magnetic tape generated a parity error. Try another drive and make it unit 0. If the system appears to take no action and halts, verify the accuracy of the routine by using the CPU console EXAM switch. Use the switch register and the DEP switch to correct any erroneous contents. Rewind the tape to its load point before executing the routine again. If no recovery is successful, you should have a DIGITAL field service representative check the device. If the hardware is working properly, you should use a new magnetic tape reel.

APPENDIX C

RSX-11M DEVICES

This appendix is a table of RSX-11M devices. It lists the device mnemonic, the device type, and the associated device controller. The bottom section of Table C-1 separately lists pseudo devices.

Table C-1
RSX-11M Devices

Mnemonic	Device	Hardware Controller
AD	Analog-to-Digital Converter	AD01-D
AF	Analog-to-Digital Converter	AFC11
AR	Laboratory Peripheral Subsystem	AR11
CR	Card Reader	CR11/CM11-E
CT	TU60 Cassette	TA11
DB	RP04/05/06 disk drive	RH11/RH70
DD	TU58 DECtape II	DL11
DF	RF11 disk drive	RF11
DK	RK05/J/F cartridge disk drive	RK11
DL	RL01/RL02 disk drive	RL11/RLV11/RL21/RLV21
DM	RK06/07 cartridge disk drive	RK611/RK711
DP	RP02/03 disk drive	RP11/RP11C
DR	RM02/03/05 disk drive	RH11/RH70
	RM80/RP07 fixed media	RH70
DS	RS03/04 fixed-head disk drive	RH11/RH70
DT	TU56 DECtape	TC11
DU	RA60 removable media	UDA50
	RA80/81 fixed media	UDA50
	RC25 fixed/removable media	RC25
	RD51 fixed media	RQDX1
	RX50 floppy disk	RQDX1
DX	RX01 floppy disk drive	RX11
DY	RX02 floppy disk drive	RX211/RXV21/RXV12
EM	ML11 Nonrotating Electronic Memory	RH70
GR	Graphics Display Processor and Scope	VT11/VS60
IC	Industrial Control Subsystem	ICR/ICS11
IP	Industrial Control Subsystem	IP11/IP300
IS	Industrial Control Subsystem	DRS/DS11
LA	Laboratory Peripheral Accelerator	LPA11-K
LP	Line Printer	LA11/LP11/LS11/LV11
LS	Laboratory Peripheral Subsystem	LPS11
MF	TU78 magtape drive	RH70/TM78
MM	TU45/TU16/TE16/TU77 magtape drive	RH11/RH70/TM02/TM03
MS	TS11/TSV05/TU80 magtapes	TS11
MT	TS03/TU10/TE10 magtape drive	TM11/TMA11/TMB11
PP	Paper Tape Punch	PC11

(continued on next page)

Table C-1 (Cont.)
RSX-11M Devices

Mnemonic	Device	Hardware Controller
PR	Paper Tape Reader	PC11/PR11
UD	Universal Digital Controller	UDC11
XB	Interprocessor Link	DA11-B
XL	Interprocessor Link	DL11-E
XM	Interprocessor Link	DMC11-E/DMR11
XP	Synchronous Interface	DP11
XQ	Synchronous Interface	DQ11
XU	Synchronous Interface	DU11
XW	Synchronous Interface	DUP11
YH	Asynchronous Terminal Interface	DH11/DHV11
YJ	Asynchronous Terminal Interface	DJ11
YL	Asynchronous Terminal Interface	DL11/A/B/C/D/E/J/W
YZ	Asynchronous Terminal Interface	DZ11/DZV11

Mnemonic	Pseudo Device	Hardware Controller
CL	Console Listing Pseudo Device	N/A
CO	Console Output Pseudo Device	N/A
LB	Library Default Pseudo Device	N/A
NL	Null Device	N/A
SY	System Default Pseudo Device	N/A
TI	Terminal Input Pseudo Device	N/A

APPENDIX D

FUNCTIONS IMPACTING POOL (DYNAMIC MEMORY)

D.1 COMMON FUNCTIONS

Use the following information when calculating the amount of pool (dynamic memory) to allocate during Phase I of SYSGEN.

Tasks

Each task installed in the system requires at least 25(10) words for a task control block.

I/O Requests

Each I/O request results in the allocation of an 18(10)-word I/O packet, which is queued to the appropriate device driver.

Send Data and Send By Reference Message

Each Send Data or Send by Reference message sent to a task results in an 18(10)-word message packet being allocated to hold the requisite data.

Partitions and Subpartitions

Each main partition and subpartition requires a partition control block of at least 18(10) words to describe its memory. In addition, for each active task, fixed task, and loaded driver in a system-controlled partition (whether the tasks are checkpointed or in memory), a PCB is built and allocated in the dynamic storage region.

Open Files on Files-11 Disks

Each open disk file requires a File Control Block for each file header. However, only one FCB is required, no matter how many accessors there are to a particular file. The size of an FCB is 22(10) words. If F11ACP has sufficient buffer space, the FCB will be contained within the task address space.

Each accessor to a disk file requires a window block. (Each LUN that has a file open counts as a separate accessor.) The size of a window block varies depending on a number of factors:

- The fixed portion of the window block is 7(10) words for RSX-11M.
- The variable portion of the window is the window size times 3(10) words.

- The window block is rounded up to the next 2(10)-word boundary for RSX-11M.

The window size is determined when the file is accessed from:

- The value specified when the file is accessed
- The value specified when the volume was mounted
- The value specified when the volume was created
- If none of the previous were specified or are unreasonable then a value of 7 is used.

A value of -1 has special significance; the window size is determined by the number of pointers required to map all of the file with a limit of about 100(10) words. The typical window size is 23(10) words. Therefore, the window size can exceed 250(10) words.

If block locking is enabled, each lock requires a primary pool-lock block. The size of this lock block is 4(10) words. An initial entry is allocated when the file is first accessed with locking enabled. Additional entries are allocated as required when the I/O takes place. Lock blocks are only released when the file is no longer accessed. (Thus a cache of lock blocks is available for quick use.)

Open Files on Labeled or Unlabeled Tapes

The window block is included in the Volume Control Block and consequently no additional pool is required when a file is accessed. There is no FCB equivalent.

All Mounted Volumes

Each mounted system volume and each mounted private volume require a control block in a system-wide list of mounted volumes. Each shared mounted volume requires a control block for each separate user. The size of this block is 4(10) words.

Mounted Files-11 Disk Volumes

Each mounted disk volume requires a Volume Control Block (VCB). The VCB is 28(10) words long. In addition, each header of the index file requires an FCB, normally only one at 22(10) words. This FCB will be allocated in the F11ACP's internal pool if possible. A window block is allocated for the index file. See the discussion on sizes and locations of file windows. Additional FCBs will be allocated as needed for the fast directory access cache controlled by the /LRU or /ACCESSED keyword.

Mounted Labeled and Unlabeled Tapes

Each file-structured tape set requires a single Volume Control Block (regardless of the number of units or tapes), a Mounted Volume List (MVL) entry for each device unit, and an Unmounted Volume List (UVL) entry for each two-tape volume in the tape volume set. The size of the VCB is 70(10) words, the MVL is 8(10) words, and UVL is 9(10) words.

Foreign Mounted Disks and Tapes

Each tape or disk mounted foreign requires only a short VCB. The size of this short VCB is 10(10) words.

Clock Queue Entries

Each clock queue entry requires 8(10)words. These entries represent marktime, schedule, and periodic scheduling requests.

AST-Related Processing

Each powerfail, receive, and floating point processor AST trap-enable for active tasks requires 8(10) words for an AST control block. Half-duplex and full-duplex terminal drivers allocate 14(10)-word blocks for single-character ASTs. At any point in time, the full-duplex terminal driver will have only one AST outstanding on a given terminal, whereas the half-duplex terminal driver could have many.

I/O Buffers

With the full-duplex terminal driver, output is buffered in the terminal driver before it is transferred to the user buffer. Each solicited and unsolicited input request requires a 42(10)-word input buffer for half-duplex terminal drivers, and successive 20(10)-word blocks, as needed, for the full-duplex terminal driver.

Card Images

Card images read from the CM/CR11 are buffered by the card reader driver before the driver transfers the information to the user buffer. Binary output requires an 80(10)-word buffer, whereas ASCII input requires a 4(10)-word buffer.

Task Headers

In a mapped system, the task header is copied into a block of memory allocated from the dynamic storage region. The standard task header size for each task in memory (that is, in execution and not checkpointed or inactive and fixed) is 62(10) words with a default of six LUNs and one window block. You can specify up through 250 logical units for a task (2(10) words per logical unit) and 7(10) window blocks (8(10) words per window block).

It is possible that a task with many LUNs and window blocks could use all the available dynamic memory. If the loader fails to load such a task (that is, fails to allocate the header for that task), the loader tries to checkpoint any tasks waiting to be checkpointed to free adequate contiguous pool space. If enough contiguous pool space does not become available for the large task header, all tasks currently running continue to run, but no tasks can be loaded.

Data Bases for Loadable Drivers

Data bases that are loaded into a system with a loadable driver require the amount of memory equal to the size of the data base.

Loadable Drivers

Loadable drivers on a mapped system require space for interrupt linkage as follows:

- 14(10) words per interrupt entry for single-controller, non-error-logging drivers

- 22(10) words per interrupt entry for multicontroller, non-error-logging drivers le;14(10) words for the first (or only) interrupt entry for error-logging drivers, plus 6(10) words for each additional interrupt entry for error-logging drivers

Checkpointing

Systems with dynamic checkpoint space allocation require 8(10) words to describe each checkpoint file and 8(10) words for each task checkpointed to a checkpoint file.

Memory Management Directives

Systems supporting the memory management directives require 6(10) words per task (active or fixed) for each region a task is attached to. This includes the task region and all static and dynamic commons.

Connect-to-Interrupt Directive

Systems supporting the Connect-to-Interrupt directive require 22(10) words for each Interrupt Transfer Block (ITB) used for each interrupt vector serviced by a Connect-to-Interrupt directive.

Error Logging

Variable-length packets are allocated for each logged error that has not been serviced by the Error Logger. Error limiting protects pool from being flooded by a sudden burst of device errors. (See the RSX-11M/M-PLUS Error Logging Manual.)

D.2 REAL-TIME FUNCTIONS

LPS11 (Laboratory Peripheral Subsystem) and AR11 (Analog Real-time System)

Each LPS11/AR11 synchronous function requires 20.words for a secondary control block.

ICS/ICR11 (Industrial Control Subsystem/Industrial Control Remote)

Each task linked to ICS/ICR interrupts requires 16.words of dynamic memory, plus 6.words for each additional interrupt linkage.

DRS/DSS11 (Industrial Control System Modules)

Each task linked to DRS/DSS interrupts requires 9(10) words of dynamic memory, plus 5(10) words for each additional interrupt linkage.

IP11 (Industrial Processor)

Each task linked to IP11 interrupts requires 18(10) words of dynamic memory, plus 8(10) words for each additional interrrupt linkage.

Each Digital Sense Interrupt (DSI) module requires one byte of dynamic memory per each module byte for a change-of-state history table.

A to D mapping tables require 8(10) words for each AO14 module and 10(10) words for each AO20 module.

LPA11 (Laboratory Peripheral Accelerator)

For the duration of every transfer, 10(10) words of dynamic memory are allocated for (Unibus mapping Register UMR) mapping work space.

For a Request Data Array (RDA), see the LPA-11 documentation.

For the duration of every transfer in which an AST (Asynchronous System Trap) is specified, 6(10) words of dynamic memory are allocated for an AST block.

APPENDIX E

ADDRESS AND VECTOR ASSIGNMENTS

Specific algorithms exist for assigning UNIBUS addresses and interrupt vector addresses to all devices attached to PDP-11 hardware. UNIBUS addresses and interrupt vector address assignments are either floating or fixed.

If a device has a floating address assignment, the presence or absence of any floating address device effects the assignment of addresses to other floating address devices. Similarly, many devices have floating vector addresses.

According to the algorithm, interrupt vectors must be assigned in a specific sequence and the presence of one type of device effects the correct assignment of interrupt vectors of other devices. If a device has a fixed address or vector, its location is unaffected by other devices on the system.

This appendix presents the algorithms for assigning floating addresses and vectors. It also lists the fixed assignments for devices supported by the Autoconfigure task. DIGITAL recommends that the hardware follow the configuration rules.

E.1 AUTOCONFIGURE DEVICE SUPPORT

The following table lists the devices supported by autoconfiguration. This list is only a subset of the devices supported by RSX-11M. The complete list of devices supported by RSX-11M can be found in Appendix C or in the RSX-11M Software Product Description.

As stated previously, many devices have floating CSR addresses. A complete description of the algorithm used to determine these CSR addresses can be found in Section E.2.

Table E-1 also contains those devices that have floating vectors. These devices can be identified by a ranking priority under the vector label. The floating vectors begin at address 300 and proceed continuously upwards.

Gaps in the vector assignments are not required. The vector assignment sequence is done based on ascending vector ranking. That is, the device with the lowest rank is assigned the next floating vector address. The autoconfiguration process dynamically computes the vectors of all supported devices. This is done by forcing each present device to interrupt.

Table E-1
Autoconfiguration Device Support

Device	CSR Address	Reg. Size	First Vector	Maximum Number Ctrl	Interrupt Priority	Remarks
TA11	177500	4	260	1.	6	
TU58	176500	10	300	4.	5	On a DL11
RK11	177404	20	220	1.	5	
RL11/RL211	174400	20	160	1.	5	
RK611/RK711	177440	40	210	1.	5	
RP11	176714	40	254	1.	5	
TC11	177342	20	214	1.	6	
UDA50/RQDX1 RC25	172150	4	154	1.	5	All MSCP devices
RX11/RX211	177170	10	264	1.	5	
RH11/RH70	172040	40	204	1.	5	RS03/RS04
RH11/RH70	172440	40	224	1.	5	TU16/45/77, TE16
RH11/RH70	175400	100	260	1.	5	TU78
RH11/RH70	176300	100	150	1.	5	RS/RP/RM/TU ALT.
RH11/RH70	176400	54	204	1.	5	ML11
RH11/RH70	176700	54	254	1.	5	RP04/05/06 or RM02/03/05
TM11	172522	20	224	1.	5	
TS11	172522	4	224	8.	5	
LP/LS/LV11	177514	10	200	1.	4	LPA
LP/LS/LV11	164004	10	170	1.	4	LPB
LP/LS/LV11	164014	10	174	1.	4	LPC
LP/LS/LV11	164024	10	270	1.	4	LPD
LP/LS/LV11	164034	10	274	1.	4	LPE
LP/LS/LV11	164044	10	774	1.	4	LPF
LP/LS/LV11	164054	10	770	1.	4	LPG
LP/LS/LV11	164064	10	764	1.	4	LPH
PR11	177550	4	070	1.	4	
PC11	177554	4	074	1.	4	
DH11	FLOAT	20	Rank 16	16.	5	
DL11-A/B/J	176500	10	Rank 2	16.	5	
DL11-C/D/E	175610	10	Rank 14	31.	5	
DL11-W	177560	10	060	1.	4	Console
DM11-BB	170500	10	Rank 6	16.	5	
DZ11	FLOAT	10	Rank 28	16.	5	

E.2 FLOATING ADDRESS ASSIGNMENT ALGORITHM

The following is the algorithm used to assign CSR addresses to all devices that have floating addresses. The autoconfiguration process finds only the devices listed in Table E-1. If the system contains devices not listed, you must configure them manually.

The floating address space starts at 760010(8) and proceeds upward to 764000(8).

A gap in the address space (no SLAVE SYNC) implies that a device does not exist.

The first address of a new type device will always be on a 2 N word boundary, where N is the first integer greater than or equal to LOG M and M is the number of device registers.

Number of Registers in Device	Possible Boundaries
1	Any Word
2	XXXXX0, XXXXX4
3,4	XXXXX0
5,6,7,8	XXXX00, XXXX20, XXXX40, XXXX60
9 thru 16	XXXX00, XXXX40

A gap of at least one word will be left after each type of device, starting on the same boundary the device would start on. Note that the gap must be at least one word but may be longer than one word. Gap length is determined by the boundary on which the next must be addressed contiguously.

Address 760010 is reserved for the first DJ11. Since the DJ11 has four registers, additional DJ11s are assigned addresses modulo 10 (base 8) immediately following the first DJ11 (that is, 760010, 760020, and the like.) The modulo 10 (base 8) address following the last DJ11 is left empty and is known as the DJ11 gap. If there are no DJ11s, the gap is at 760010. If there is one DJ11, the gap will be at 760020. All gaps must be at least one word.

After all DJ11 addresses and the DJ11 gap are defined, the address for the first DH11 can be assigned. DH11s have eight registers which implies a modulo 20 (base 8) boundary. The address of the first DH11 is the first modulo 20 address following the DJ11 gap. If there are no DJ11s (DJ11 gap at 760010), the first DH11 is assigned address 760020. Similarly, if there is one DJ11, the DJ1 gap begins at 760020 and the next available modulo 20 boundary is 760040. All additional DH11s are assigned addresses modulo 20 immediately after the first DH11. The DH11 gap begins on the module 20 boundary following the last DH11.

After all DH11 addresses and the DH11 gap are defined, DQ11, DU11, DUP11, LK11, DMC11, DZ11, and KMC11 addresses and the required gaps can be assigned in sequence. Addresses for any future floating address devices will be assigned in a similar manner.

E.3 FLOATING ADDRESS WORKSHEET

The algorithm for assignment of floating addresses can be confusing for a large configuration with multiple units of several types of floating address devices. The floating address worksheet that follows is a graphic aid that should eliminate some confusion and relieve configuration problems. The worksheet allows you to assign device addresses quickly without referring to the formal rules. Instructions for use of the worksheet follow. Two configuration examples (Example E-1 and Example E-2) and a blank worksheet (Example E-3) at the end of this appendix are provided for general use.

E.3.1 Worksheet Format

The worksheet is divided into four sections covering the address range 760010 through 762000. Although the floating address area continues up to address 764000, the worksheet should cover most configurations. If necessary, you can create a second worksheet by adding 2000 to all addresses listed.

E.3.2 Worksheet Instructions

The following are the instructions for the use of the worksheet:

1. Record the quantity of each type of floating address device in the space provided on the worksheet.

2. Beginning at the upper left of the worksheet at address 760010 and proceeding down the DJ11 column, record the unit numbers for all DJ11s in the configuration. Begin with unit 0 and end with unit n-1. (There are n DJ11s in the configuration.)

3. Immediately below the last DJ11 unit, mark an X for the required DJ11 address gap. Also mark an X in the box immediately to the right (DH11 column).

   In general, when numbering device units down the appropriate column, use only the unshaded boxes. The shaded boxes represent illegal addresses for the particular device type. Because the gap address must also be a legal device address, use only an unshaded box for the gap X when numbering down a column.

   In marking an X in the column to the right of a device address gap, use shaded boxes because the X in the next column merely provides a starting point for numbering units of the next device type. If there are no units of a particular device type, enter only the gap Xs on the worksheet.

   If you use all available space in one section of the worksheet, simply copy the entries on the last line of the full section to the top line of the next section. Then continue numbering in the new section.

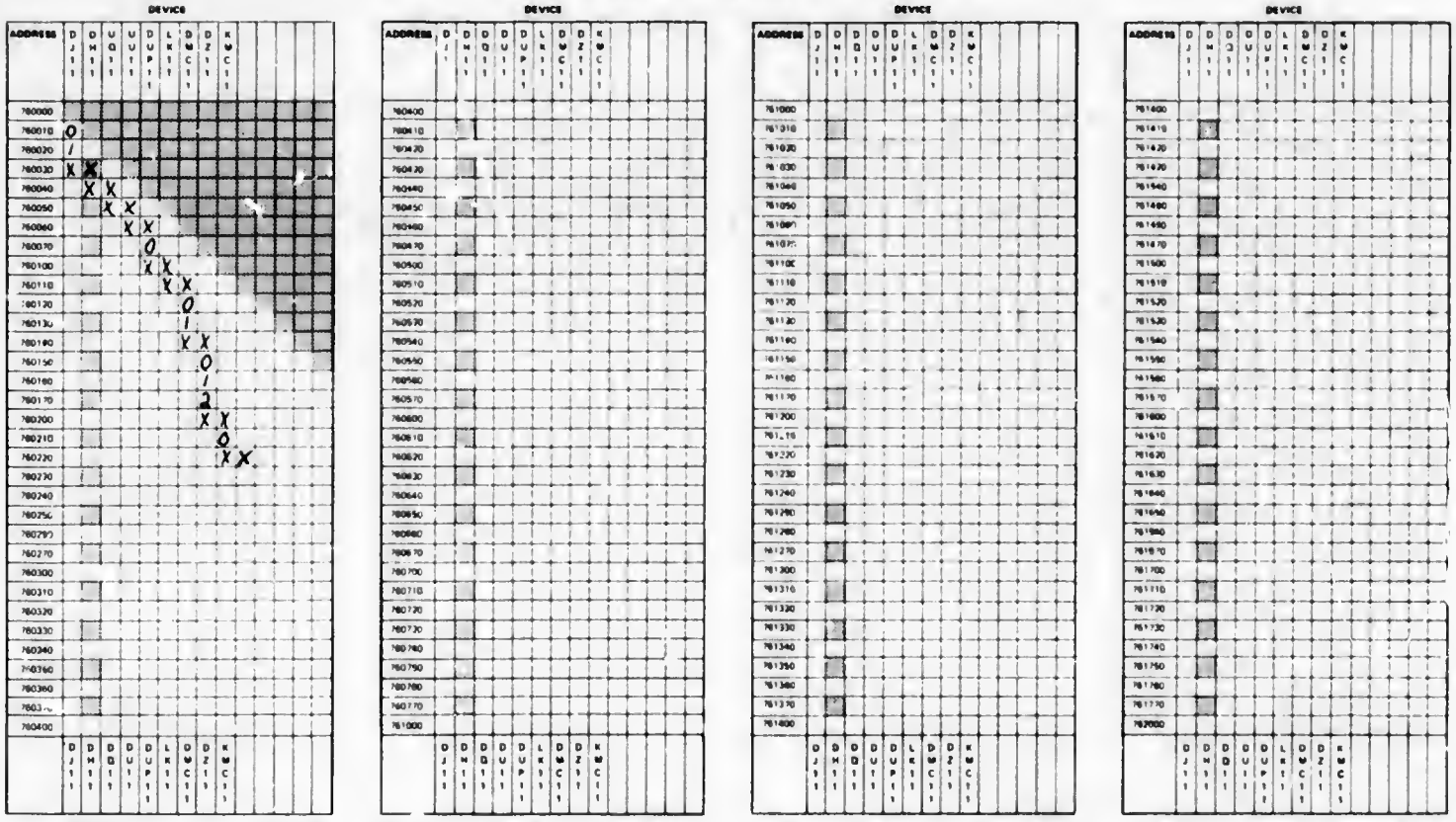
4. Continuing just below the X in the DH11 column, number all DH11 units. Once again, start with unit 0 and continue to unit n-1. Skip the shaded boxes in numbering down the column. In the first unshaded box below the last DH11 unit, mark an X for the DH11 gap. Also mark an X in the box to the right, whether it is shaded or unshaded.

5. Continue with the remaining floating address devices. In each case, number units from 0 to n-1 down the column beginning in the first unshaded box below the X. Mark an X in the next unshaded box below the last unit and in the box immediately to the right of the last unit (whether that box is shaded or unshaded).

6. After you have recorded all floating address devices, you can read the UNIBUS address for each device unit directly from the worksheet.

Example E-1 Floating Address Worksheet (Configuration 1)

FLOATING ADDRESS WORKSHEET (EXAMPLE 1)



	QTY (n)		QTY (n)
DJ11	2	DMC11	2
DH11	0	DZ11	3
DQ11	0	KMC11	1
DU11	0		
DUP11	1		
LK11	0		

DEV	UNIT	ADDRESS
DJ	0	760010
DJ	1	760020
DUP	0	760070
DMC	0	760120
DMC	1	760130
DZ	0	760150

DEV	UNIT	ADDRESS
DZ	1	760160
DZ	2	760170
KMC	0	760210

DEV	UNIT	ADDRESS

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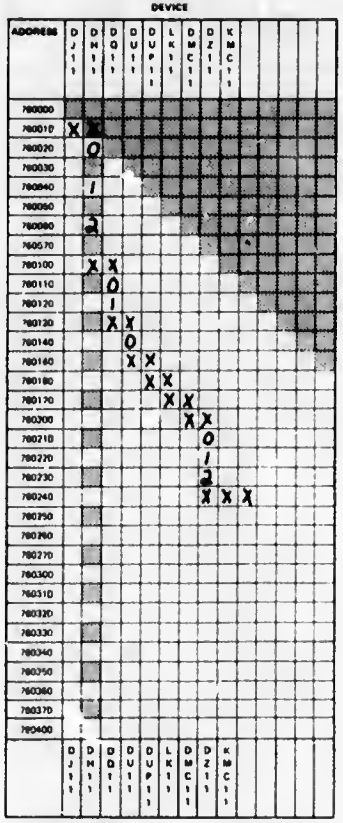
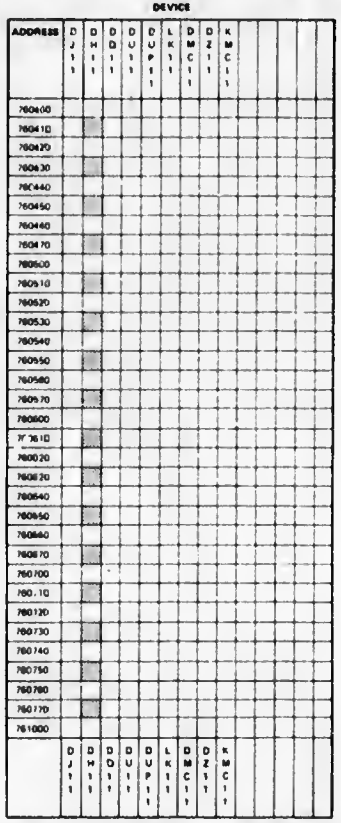
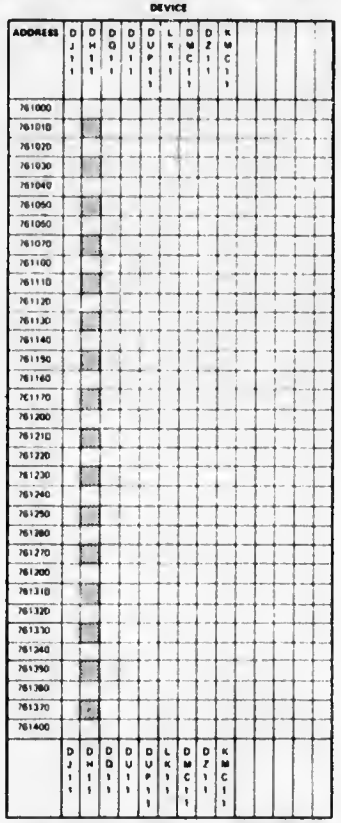
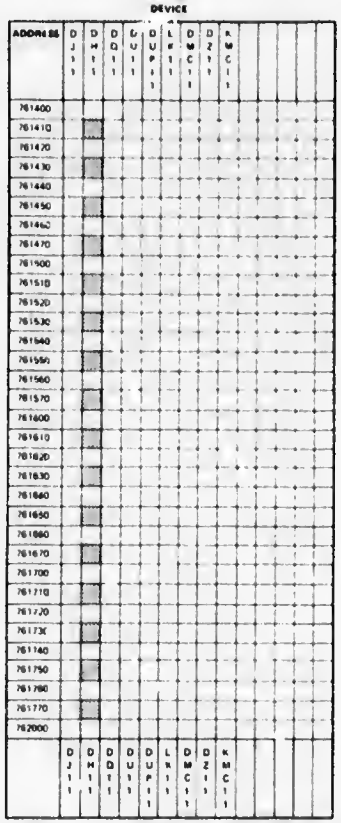
Example E-2 Floating Address Worksheet (Configuration 2)

FLOATING ADDRESS WORKSHEET (EXAMPLE 2)









	QTY (n)		QTY (n)
DJ11	0	DMC11	0
DH11	3	DZ11	3
DQ11	2	KMC11	0
DU11	1		
DUP11	0		
LK11	0		

DEV	UNIT	ADDRESS
DH	0	760020
DH	1	760040
DH	2	760060
DQ	0	760110
DQ	1	760120
DU	0	760140

DEV	UNIT	ADDRESS
DZ	0	760210
DZ	1	760220
DZ	2	760230

DEV	UNIT	ADDRESS

DEV	UNIT	ADDRESS

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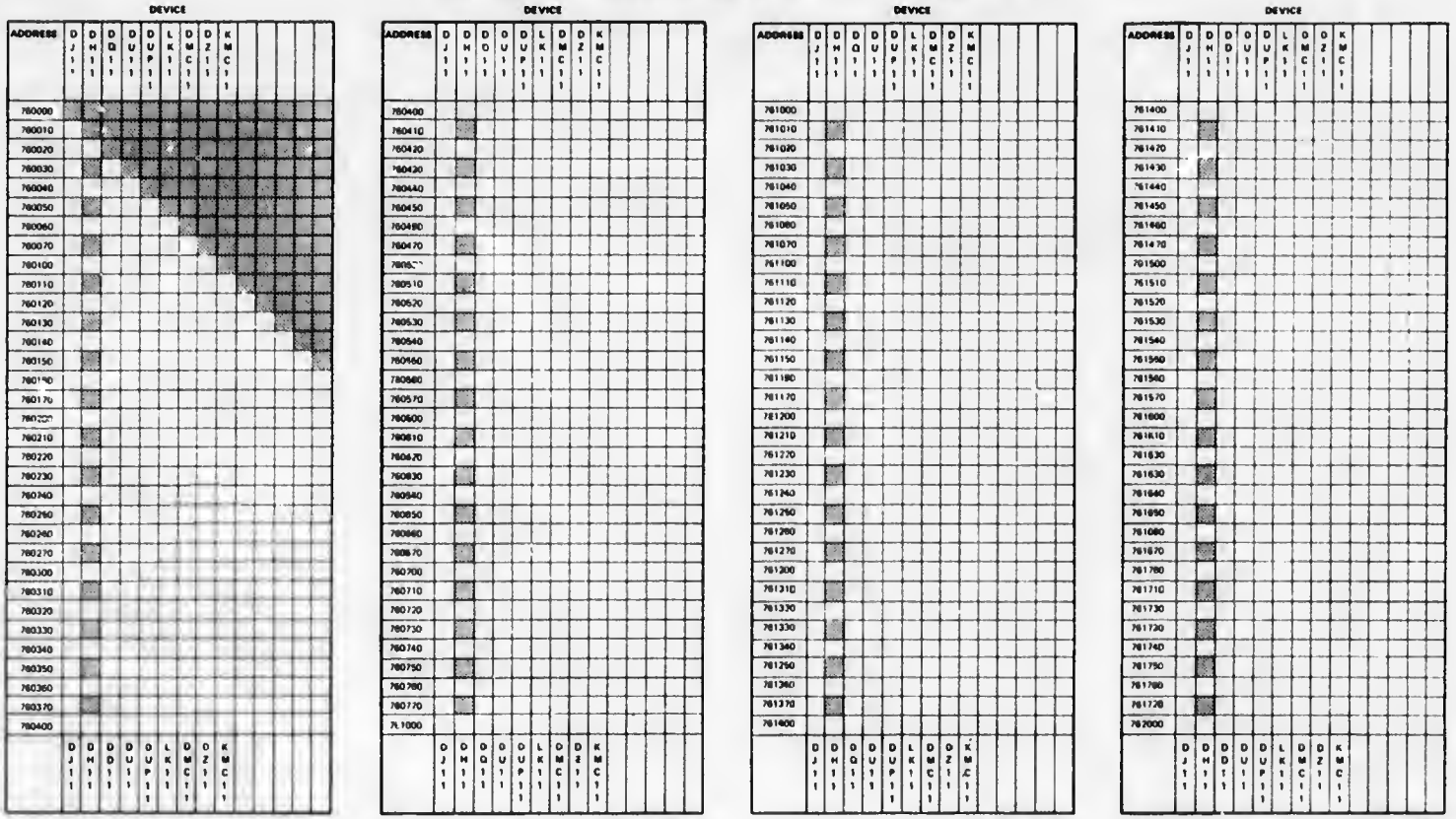
Example E-3 Blank Floating Address Worksheet

FLOATING ADDRESS WORKSHEET (EXAMPLE 3)



QTY (n)		QTY (n)
DJ11		DMC11
DH11		DZ11
DQ11		KMC11
DU11		
DUP11		
LK11		

DEV	UNIT	ADDRESS

DEV	UNIT	ADDRESS

DEV	UNIT	ADDRESS

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APPENDIX F

DISTRIBUTION KIT CONTENTS

This appendix contains directory listings of four types of distribution kits. Files appear under the appropriate UFD for each kit. For those volumes consisting of more than one disk volume, the volume name precedes those files contained in each disk volume of the kit.

F.1 DIRECTORY LISTING OF THE BIG DISK DISTRIBUTION KIT

The big disk distribution kit applies to the following disk volumes: RP04/05/06, RM02/03/05/80, RP07, RA60/80/81, and RC25. The big disk distribution kit is the same for all these disks.

F.1.1 RSXM35

UFD [1,1]

KMCLP.BIN;1	6.
RSXMACID.MAC;1	38.
R0RMS1.MAC;1	12.
EXEMC.MLB;1	66.
RMSMAC.MLB;1	185.
FCS.OBJ;1	24.
FCSMBF.OBJ;1	32.
FCSMTA.OBJ;1	30.
LPA.OBJ;1	16.
LPS.OBJ;1	5.
ODT.OBJ;1	8.
PURICR.OBJ;1	6.
PURISA.OBJ;1	8.
PURPCS.OBJ;1	14.
PURUDC.OBJ;1	3.
TRACE.OBJ;1	3.
DAPRLX.ODL;1	2.
DAP11X.ODL;1	6.
RMSRLX.ODL;1	2.
RMS11.ODL;1	85.
RMS11S.ODL;1	4.
RMS11X.ODL;1	6.
RMS12S.ODL;1	4.
RMS12X.ODL;1	6.
EXELIB.OLB;1	45.
RMSDAP.OLB;1	95.
RMSLIB.OLB;1	214.
SYSLIB.OLB;1	230.
VMLIB.OLB;1	16.
RSXMAC.SML;1	253.

BIG DISK RSXM35

UFD [1,1]

DAPRES.STB;1	2.
RMSRES.STB;1	3.
DAPRES.TSK;1	40.
RMSRES.TSK;1	87.
RMSRESSUB.TSK;1	48.

Total of 1604./1609. blocks in 35. files

UFD [1,2]

RMSINSTAL.CMD;1	14.
STARTUP.CMD;1	6.
RMSDES.HLP;1	308.
QIOSYM.MSG;1	29.
HELP.ULB:1	2253.

Total of 2610./2610. blocks in 5. files

UFD [1,3]

Total of 0./0. blocks in 0. files

UFD [1,4]

Total of 0./0. blocks in 0. files

UFD [1,6]

ERRLOG.ULB;1	622.
ERRLOGETC.ULB;1	70.

Total of 692./692. blocks in 2. files

UFD [1,7]

Total of 0./0. blocks in 0. files

BIG DISK RSXM35 (Cont.)

UFD [1,20]

ACFBLD.BLD;1	2.
ACNBLD.BLD;1	5.
ACOBLD.BLD;1	2.
ACSBLD.BLD;1	2.
BADBLD.BLD;1	2.
BOOBLD.BLD;1	5.
BROBLD.BLD;1	2.
BRUBLD.BLD;1	3.
BYEBLD.BLD;1	2.
CDABLD.BLD;1	20.
CFLBLD.BLD;1	9.
CMPBLD.BLD;1	6.
COTBLD.BLD;1	4.
CRFBLD.BLD;1	13.
DCLBLD.BLD;1	21.
DMOBLD.BLD;1	3.
DMPBLD.BLD;1	9.
DSCBLD.BLD;1	7.
EDIBLD.BLD;1	8.
EDTBLD.BLD;1	5.
ELIBLD.BLD;1	4.
ERLBLD.BLD;1	5.
FCPLRGBLD.BLD;1	9.
FCPMDLBLD.BLD;1	17.
FCPMINBLD.BLD;1	17.
FCPSMLBLD.BLD;1	11.
FCSRS1BLD.BLD;1	10.
FLXBLD.BLD;1	18.
FMTBLD.BLD;1	3.
FTBBLD.BLD;1	5.
F11MSGBLD.BLD;1	3.
HELBLD.BLD;1	8.
ICPBLD.BLD;1	8.
ICPCOMBLD.BLD;1	21.
ICQBLD.BLD;1	9.
INIBLD.BLD;1	7.
INSBLD.BLD;1	3.
IOXBLD.BLD;1	22.
LBRBLD.BLD;1	24.
LOABLD.BLD;1	4.
LPIBLD.BLD;1	2.
LPPBLD.BLD;1	11.
MACBLD.BLD;1	16.
MCMBLD.BLD;1	9.
MCRBLD.BLD;1	18.
MOUBLD.BLD;1	4.
MTABLD.BLD;1	17.
PATBLD.BLD;1	8.
PIPBLD.BLD;1	24.
PMDBLD.BLD;1	10.
PMTBLD.BLD;1	8.
PRTBLD.BLD;1	9.
QCLBLD.BLD;1	8.
QMCBLD.BLD;1	9.
QPRBLD.BLD;1	2.
RCTBLD.BLD;1	2.

BIG DISK RSXM35 (Cont.)

UFD [1,20]

RMDBLD.BLD;1	15.
RPTBLD.BLD;1	14.
SAVBLD.BLD;1	14.
SHFBLD.BLD;1	2.
SHUBLD.BLD;1	2.
SLPBLD.BLD;1	7.
STKBLD.BLD;1	28.
TDXBLD.BLD;1	2.
TKPBLD.BLD;1	31.
TKNBLD.BLD;1	2.
UFDBLD.BLD;1	2.
UNLBLD.BLD;1	2.
VFYBLD.BLD;1	9.
VMRBLD.BLD;1	12.
ZAPBLD.BLD;1	4.
ICBLD.CMD;1	1.
IPBLD.CMD;1	1.
ISBLD.CMD;1	1.
UDCBLD.CMD;1	1.
LPINIT.OBJ;1	4.
SYSROT.OBJ;1	1.
BAD.OLB;1	36.
BOO.OLB;1	11.
BRU.OLB;1	279.
CDA.OLB;1	144.
CMP.OLB;1	26.
CRF.OLB;1	40.
DCLO.OLB;1	493.
DCLR.OLB;1	54.
DMP.OLB;1	39.
DSC.OLB;1	164.
EDI.OLB;1	57.
EDTLIB.OLB;1	184.
ERL.OLB;1	35.
FCP.OLB;1	87.
FIL.OLB;1	124.
FLX.OLB;1	142.
FMT.OLB;1	55.
FTB.OLB;1	105.
F11MSG.OLB;1	9.
ICP11M.OLB;1	120.
INI.OLB;1	84.
INS.OLB;1	35.
IOX.OLB;1	127.
LAINIT.OLB;1	21.
LBR.OLB;1	70.
LOA.OLB;1	43.
MAC.OLB;1	149.
MCR.OLB;1	193.
MLTUSR.OLB;1	81.
MTA.OLB;1	102.
NEISLB.OLB;1	14.
PAT.OLB;1	34.
PIP.OLB;1	96.
PIPUTL.OLB;1	25.
PMD.OLB;1	32.

BIG DISK RSXM35 (Cont.)

UFD [1,20]

PRT.OLB;1	19.
RMD.OLB;1	70.
RPT.OLB;1	222.
SAV.OLB;1	65.
SLP.OLB;1	34.
TKB.OLB;1	308.
VFY.OLB;1	53.
VMR.OLB;1	226.
ZAP.OLB;1	33.

Total of 4990./5050. blocks in 121. files

UFD [1,24]

BCKNON.CMD;1	1.
BCKNRN.CMD;1	1.
CNVNON.CMD;1	1.
CNVNOO.CMD;1	1.
CNVNRN.CMD;1	1.
CNVNRR.CMD;1	1.
DAPRES.CMD;1	1.
DEFNON.CMD;1	1.
DEFNRN.CMD;1	1.
DESNON.CMD;1	1.
DESNRN.CMD;1	1.
DSPNON.CMD;1	1.
DSPNRN.CMD;1	1.
ICBLD.CMD;1	1.
IFLNON.CMD;1	1.
IFLNRN.CMD;1	1.
IPBLD.CMD;1	1.
ISBLD.CMD;1	1.
RMSRES.CMD;1	1.
RSTNON.CMD;1	1.
RSTNRN.CMD;1	1.
UDCBLD.CMD;1	1.
LPINIT.OBJ;1	4.
SHUFL.OBJ;1	4.
SYSROT.OBJ;1	1.
TDX.OBJ;1	12.
BCKNON.ODL;1	8.
BCKNRN.ODL;1	8.
CNVNON.ODL;1	10.
CNVNOO.ODL;1	5.
CNVNRN.ODL;1	5.
CNVNRR.ODL;1	5.
DAPRES.ODL;1	1.
DEFNON.ODL;1	3.
DEFNRN.ODL;1	3.
DESNON.ODL;1	6.
DESNRN.ODL;1	6.
DSPNON.ODL;1	7.
DSPNRN.ODL;1	7.
IFLNON.ODL;1	5.

BIG DISK RSXM35 (Cont.)

UFD [1,24]

IFLNRN.ODL;1	3.
RMSDES.ODL;1	9.
RMSODL.ODL;1	24.
RMSRES.ODL;1	11.
RSTNON.ODL;1	11.
RSTNRN.ODL;1	11.
ACF.OLB;1	31.
BOO.OLB;1	11.
COT.OLB;1	26.
ERL.OLB;1	35.
FCP.OLB;1	92.
FIL.OLB;1	124.
ICP11M.OLB;1	120.
INI.OLB;1	84.
INS.OLB;1	37.
LAINIT.OLB;1	21.
LOA.OLB;1	47.
LPP.OLB;1	57.
MCR.OLB;1	211.
MLTUSR.OLB;1	81.
MTA.OLB;1	102.
PIPUTL.OLB;1	25.
PMD.OLB;1	33.
QMG.OLB;1	74.
QMGCLI.OLB;1	89.
RCT.OLB;1	17.
RMD.OLB;1	98.
RMSUTL.OLB;1	722.
SAV.OLB;1	69.

Total of 2397./2401. blocks in 69. files

UFD [1,30]

Total of 0./0. blocks in 0. files

UFD [1,34]

DAPRES.MAP;1	16.
RMSRES.MAP;1	59.
RMSRESSUB.MAP;1	35.

Total of 110./110. blocks in 3. files

UFD [1,50]

Total of 0./0. blocks in 0. files

BIG DISK RSXM35 (Cont.)

UFD [1,51]

BRU64K.STB;1	14.
BRU64K.SYS;1	258.

Total of 272./272. blocks in 2. files

UFD [1,54]

ACF.BSL;1	26.
SGNPARM.CMD;1	4.
DBDRV.STB;1	1.
DDDRV.STB;1	1.
DKDRV.STB;1	1.
DLDRV.STB;1	1.
DMDRV.STB;1	1.
DPDRV.STB;1	1.
DRDRV.STB;1	1.
DUDRV.STB;1	2.
DXDRV.STB;1	1.
DYDRV.STB;1	1.
LPDRV.STB;1	1.
MMDRV.STB;1	1.
MSDRV.STB;1	1.
MTDRV.STB;1	1.
RSX11M.STB;1	12.
RSX11M.SYS;1	258.
ACO.TSK;1	39.
ACS.TSK;1	14.
BAD.TSK;1	53.
BOO.TSK;1	33.
BRU.TSK;1	176.
CDA.TSK;1	166.
CMP.TSK;1	50.
CRF.TSK;1	36.
DBDRV.TSK;1	5.
DDDRV.TSK;1	6.
DKDRV.TSK;1	4.
DLDRV.TSK;1	4.
DMDRV.TSK;1	5.
DMO.TSK;1	15.
DMP.TSK;1	61.
DPDRV.TSK;1	3.
DRDRV.TSK;1	5.
DUDRV.TSK;1	11.
DXDRV.TSK;1	4.
DYDRV.TSK;1	5.
EDI.TSK;1	61.
FCPSML.TSK;1	96.
FLX.TSK;1	132.
FMT.TSK;1	68.
ICP.TSK;1	141.
INI.TSK;1	58.
INS.TSK;1	60.
IOX.TSK;1	109.
LBR.TSK;1	72.

BIG DISK RSXM35 (Cont.)

UFD [1,54]

LOA.TSK;1	29.
LPDRV.TSK;1	4.
MAC.TSK;1	89.
MCR.TSK;1	113.
MMDRV.TSK;1	7.
MOU.TSK;1	46.
MSDRV.TSK;1	7.
MTDRV.TSK;1	6.
PAT.TSK;1	45.
PIP.TSK;1	73.
RCT.TSK;1	11.
RMSBCK.TSK;1	157.
RMSCNV.TSK;1	167.
RMSDEF.TSK;1	139.
RMSDES.TSK;1	241.
RMSDSP.TSK;1	142.
RMSIFL.TSK;1	136.
RMSRST.TSK;1	177.
SAV.TSK;1	77.
SLP.TSK;1	48.
TKB.TSK;1	176.
TKN.TSK;1	18.
UFD.TSK;1	8.
UNL.TSK;1	23.
VFY.TSK;1	56.
VMR.TSK;1	156.
ZAP.TSK;1	51.

Total of 4009./4009. blocks in 74. files

UFD [1,60]

Total of 0./0. blocks in 0. files

UFD [1,64]

Total of 0./0. blocks in 0. files

UFD [2,300]

FILE1.;1	1.
FILE2.;1	1.
CMP.CMD;1	2.
CONALL.CMD;1	7.
CONCNT.CMD;1	2.
DMP.CMD;1	1.
DSC.CMD;1	6.
FLX.CMD;1	3.
INSTSK.CMD;1	1.

BIG DISK RSXM35 (Cont.)

UFD [2,300]

INTERA.CMD;1	4.
LBR.CMD;1	2.
LOAD.CMD;1	10.
MCRTST.CMD;1	6.
PAT.CMD;1	2.
PMD.CMD;1	5.
SIOE.CMD;1	9.
SLP.CMD;1	2.
SLPCMD.CMD;1	1.
STRTUP.CMD;1	10.
UETP.CMD;1	25.
UNLOAD.CMD;1	2.
UTIL.CMD;1	1.
CRTEST.MAC;1	1.
DEFINE.MAC;1	49.
DUMMY.MAC;1	1.
LOGGER.MAC;1	26.
MACRO1.MAC;1	1.
MACRO2.MAC;1	1.
MACRO3.MAC;1	1.
NUL1.MAC;1	19.
NUL2.MAC;1	19.
NUL3.MAC;1	19.
OBJCT1.MAC;1	1.
OBJCT2.MAC;1	1.
OBJCT3.MAC;1	1.
PATCH1.MAC;1	1.
QTRUN.MAC;1	28.
PATCH1.OBJ;1	1.
DEVM.SAM;1	3.
UETPCOR.TMP;1	18.
ASRC.XXX;1	1.
PATCHD.XXX;1	1.
SLPDAT.XXX;1	1.
SLPOUT.XXX;1	3.

Total of 300./300. blocks in 44. files

UFD [11,10]

ADDRV.MAC;1	10.
AFDRV.MAC;1	17.
ARDRV.MAC;1	61.
BFCTL.MAC;1	18.
CODRV.MAC;1	9.
CORAL.MAC;1	28.
CRASH.MAC;1	99.
CRDRV.MAC;1	36.
CTDRV.MAC;1	19.
CVRTM.MAC;1	5.
DBDRV.MAC;1	49.
DDDRV.MAC;1	71.
DFDRV.MAC;1	21.
DKDRV.MAC;1	23.

BIG DISK RSXM35 (Cont.)

UFD [11,10]

DLDRV.MAC;1	31.
DMDRV.MAC;1	71.
DPDRV.MAC;1	26.
DRABO.MAC;1	4.
DRASG.MAC;1	10.
DRATP.MAC;1	12.
DRATX.MAC;1	9.
DRCIN.MAC;1	21.
DRCLI.MAC;1	33.
DRCMT.MAC;1	7.
DRDAR.MAC;1	6.
DRDCP.MAC;1	8.
DRDRV.MAC;1	62.
DRDSP.MAC;1	47.
DREIF.MAC;1	43.
DREXP.MAC;1	17.
DRGCL.MAC;1	36.
DRGEF.MAC;1	19.
DRGIN.MAC;1	1.
DRGLI.MAC;1	6.
DRGPP.MAC;1	11.
DRGSS.MAC;1	3.
DRGTK.MAC;1	7.
DRGTP.MAC;1	16.
DRMAP.MAC;1	58.
DRMKT.MAC;1	11.
DRPUT.MAC;1	22.
DRQIO.MAC;1	75.
DRRAS.MAC;1	15.
DRREG.MAC;1	37.
DRREQ.MAC;1	5.
DRRES.MAC;1	12.
DRSED.MAC;1	26.
DRSMG.MAC;1	13.
DRSPW.MAC;1	85.
DRSST.MAC;1	9.
DRSUB.MAC;1	36.
DRSWS.MAC;1	7.
DSDRV.MAC;1	22.
DSSDI.MAC;1	7.
DTDRV.MAC;1	23.
DUDRV.MAC;1	227.
DXDRV.MAC;1	36.
DYDRV.MAC;1	50.
EMDRV.MAC;1	20.
ERROR.MAC;1	74.
ERSUB.MAC;1	40.
EXDBT.MAC;1	87.
EXESB.MAC;1	29.
GRDRV.MAC;1	49.
ICDRV.MAC;1	179.
ICOM.MAC;1	4.
INITL.MAC;1	33.
IOSUB.MAC;1	53.
IPCOM.MAC;1	2.
IPDRV.MAC;1	255.

BIG DISK RSXM35 (Cont.)

UFD [11,10]

IPMAP.MAC;1	2.
ISCOM.MAC;1	2.
ISDRV.MAC;1	32.
LADRV.MAC;1	90.
LKDRV.MAC;1	33.
LOADR.MAC;1	54.
LOWCR.MAC;1	6.
LPDRV.MAC;1	24.
LSDRV.MAC;1	74.
MDSUB.MAC;1	43.
MEMAP.MAC;1	39.
MFDRV.MAC;1	124.
MMDRV.MAC;1	81.
MSDRV.MAC;1	97.
MTDRV.MAC;1	59.
NLDRV.MAC;1	4.
NTDRV.MAC;1	6.
PANIC.MAC;1	16.
PARTY.MAC;1	21.
PLSUB.MAC;1	16.
PMT.MAC;1	81.
POWER.MAC;1	24.
PPDRV.MAC;1	14.
PRDRV.MAC;1	12.
QUEUE.MAC;1	22.
REQSB.MAC;1	105.
RSXMC0.MAC;1	9.
SSTSR.MAC;1	31.
SYSCM.MAC;1	37.
SYSDF.MAC;1	10.
SYSXT.MAC;1	99.
SYTAB.MAC;1	11.
TDSCH.MAC;1	20.
TTATT.MAC;1	73.
TTCAN.MAC;1	27.
TTCIS.MAC;1	19.
TTDAT.MAC;1	90.
TTDRV.MAC;1	262.
TTFP.MAC;1	15.
TTICH.MAC;1	122.
TTINI.MAC;1	35.
TTJZ.MAC;1	7.
TTMAC.MAC;1	15.
TTMIS.MAC;1	7.
TTMOD.MAC;1	20.
TTODN.MAC;1	18.
TTOIS.MAC;1	14.
TTRW.MAC;1	83.
TTSUB.MAC;1	41.
TTTBL.MAC;1	20.
TTYH.MAC;1	35.
TTYHV.MAC;1	28.
TTYJ.MAC;1	6.
TTYL.MAC;1	16.
TTYZ.MAC;1	17.
UDCOM.MAC;1	7.

BIG DISK RSXM35 (Cont.)

UFD [11,10]

UDDRV.MAC;1	54.
XBDRV.MAC;1	29.
XLDRV.MAC;1	28.
XMDRV.MAC;1	66.
XPDRV.MAC;1	25.
XQDRV.MAC;1	41.
XUDRV.MAC;1	27.
XWDRV.MAC;1	27.

Total of 5165./5165. blocks in 134. files

UFD [11,20]

Total of 0./0. blocks in 0. files

UFD [11,24]

Total of 0./0. blocks in 0. files

UFD [11,30]

Total of 0./0. blocks in 0. files

UFD [11,34]

Total of 0./0. blocks in 0. files

UFD [11,40]

Total of 0./0. blocks in 0. files

BIG DISK RSXM35 (Cont.)

UFD [12,10]

INDSYS.CLB;1	103.
ABOOV.MAC;1	24.
ACS.MAC;1	23.
ACTFIL.MAC;1	6.
ALLOV.MAC;1	27.
ALLSUB.MAC;1	21.
ALTOV.MAC;1	15.
ASNOV.MAC;1	34.
ATLOV.MAC;1	49.
BOOT.MAC;1	29.
BOOTRC.MAC;1	2.
BOTPH2.MAC;1	19.
BRKOV.MAC;1	3.
BYE.MAC;1	45.
CBTO.MAC;1	7.
CDT2B.MAC;1	6.
CLIOV.MAC;1	76.
CLQOV.MAC;1	19.
COLOG.MAC;1	9.
COT2B.MAC;1	4.
CRETSK.MAC;1	16.
DEAOV.MAC;1	10.
DEVOV.MAC;1	47.
DFSYM.MAC;1	19.
DISMNT.MAC;1	79.
DV2OV.MAC;1	52.
EDCKP.MAC;1	4.
ERMSG.MAC;1	15.
ERRMSG.MAC;1	10.
ERROV.MAC;1	13.
FILBN.MAC;1	20.
FIXOV.MAC;1	30.
FLAOV.MAC;1	19.
FMTDV.MAC;1	4.
FNDUCB.MAC;1	8.
GETNUM.MAC;1	4.
GNBLK.MAC;1	5.
GTBYT.MAC;1	6.
GTMNM.MAC;1	4.
GTTSK.MAC;1	8.
HELLO.MAC;1	146.
ICBDEF.MAC;1	5.
ICPASK.MAC;1	6.
ICPASV.MAC;1	14.
ICPAS1.MAC;1	12.
ICPAS2.MAC;1	10.
ICPAS3.MAC;1	11.
ICPAS4.MAC;1	9.
ICPAS5.MAC;1	7.
ICPATS.MAC;1	11.
ICPBLK.MAC;1	8.
ICPCHA.MAC;1	5.
ICPCHN.MAC;1	9.
ICPENB.MAC;1	16.
ICPERA.MAC;1	5.
ICPERR.MAC;1	18.

BIG DISK RSXM35 (Cont.)

UFD [12,10]

ICPEXF.MAC;1	14.
ICPEXI.MAC;1	7.
ICPFCL.MAC;1	7.
ICPFDC.MAC;1	11.
ICPFEX.MAC;1	4.
ICPFIL.MAC;1	2.
ICPFMI.MAC;1	2.
ICPFMO.MAC;1	2.
ICPFMS.MAC;1	27.
ICPFMX.MAC;1	4.
ICPFOP.MAC;1	18.
ICPFUT.MAC;1	22.
ICPF10.MAC;1	2.
ICPF52.MAC;1	1.
ICPGNB.MAC;1	6.
ICPGOT.MAC;1	14.
ICPGTK.MAC;1	13.
ICPGTN.MAC;1	4.
ICPIF1.MAC;1	9.
ICPIF2.MAC;1	6.
ICPIF3.MAC;1	8.
ICPIF4.MAC;1	8.
ICPIMP.MAC;1	30.
ICPINX.MAC;1	6.
ICPIN2.MAC;1	8.
ICPIN3.MAC;1	15.
ICPIN4.MAC;1	18.
ICPIN5.MAC;1	6.
ICPMCR.MAC;1	7.
ICPMEM.MAC;1	5.
ICPMEN.MAC;1	2.
ICPNEC.MAC;1	1.
ICPNEI.MAC;1	1.
ICPNEN.MAC;1	2.
ICPNET.MAC;1	14.
ICPNEX.MAC;1	3.
ICPNPR.MAC;1	1.
ICPNP1.MAC;1	5.
ICPONR.MAC;1	24.
ICPPAR.MAC;1	15.
ICPPDW.MAC;1	14.
ICPPOP.MAC;1	11.
ICPPO1.MAC;1	8.
ICPPRC.MAC;1	13.
ICPPRE.MAC;1	29.
ICPPRS.MAC;1	6.
ICPROT.MAC;1	28.
ICPSET.MAC;1	6.
ICPSTP.MAC;1	3.
ICPSUB.MAC;1	28.
ICPSUT.MAC;1	5.
ICPSU1.MAC;1	20.
ICPSU2.MAC;1	19.
ICPSU3.MAC;1	18.
ICPSU4.MAC;1	8.
ICPSU5.MAC;1	4.

BIG DISK RSXM35 (Cont.)

UFD [12,10]

ICPSU6.MAC;1	5.
ICPSYC.MAC;1	14.
ICPSYT.MAC;1	25.
ICPSY1.MAC;1	26.
ICPSY2.MAC;1	8.
ICPSY3.MAC;1	12.
ICPTDV.MAC;1	19.
ICPTES.MAC;1	11.
ICPTPA.MAC;1	7.
ICPVEC.MAC;1	2.
ICPWFT.MAC;1	10.
ICPXMD.MAC;1	4.
INIALL.MAC;1	23.
INIBAD.MAC;1	55.
INIBIT.MAC;1	35.
INIGCL.MAC;1	69.
INIHOM.MAC;1	23.
INIMAG.MAC;1	42.
ININDX.MAC;1	38.
INIPAR.MAC;1	119.
INIROT.MAC;1	64.
INIUPD.MAC;1	41.
INSBF.MAC;1	6.
INSCM.MAC;1	10.
INSFL.MAC;1	17.
INSFSR.MAC;1	2.
INSGC.MAC;1	2.
INSHD.MAC;1	30.
INSLB.MAC;1	72.
INSPS.MAC;1	26.
INSROT.MAC;1	19.
IODAT.MAC;1	7.
KEYWD.MAC;1	5.
LDBUF.MAC;1	6.
LDCTL.MAC;1	27.
LDDRV.MAC;1	26.
LDFIL.MAC;1	8.
LDFIN.MAC;1	33.
LDLDB.MAC;1	22.
LDUIC.MAC;1	3.
LKLST.MAC;1	7.
LN1OV.MAC;1	9.
LUNOV.MAC;1	13.
MCRDEF.MAC;1	5.
MCRDIS.MAC;1	79.
MCROOT.MAC;1	10.
MCROV.MAC;1	59.
MDPOV.MAC;1	10.
MGCML.MAC;1	35.
MOUCLS.MAC;1	20.
MOUDAT.MAC;1	18.
MOUDIS.MAC;1	32.
MOUDSK.MAC;1	26.
MOUFOR.MAC;1	30.
MOUMSG.MAC;1	16.
MOUPAR.MAC;1	43.

BIG DISK RSXM35 (Cont.)

UFD [12,10]

MOUPRE.MAC;1	4.
MOUROT.MAC;1	9.
MOUSUB.MAC;1	52.
MOUTAP.MAC;1	38.
MSGOUT.MAC;1	12.
NETSUB.MAC;1	2.
OPEOV.MAC;1	62.
PAROV.MAC;1	24.
PR1OV.MAC;1	8.
RAPOV.MAC;1	14.
REAOV.MAC;1	7.
REDOV.MAC;1	12.
REQCOT.MAC;1	11.
RPSOV.MAC;1	28.
RUNOV.MAC;1	26.
SAVBOT.MAC;1	17.
SAVCPU.MAC;1	13.
SAVC1.MAC;1	20.
SAVC2.MAC;1	17.
SAVC3.MAC;1	6.
SAVDB.MAC;1	14.
SAVDF.MAC;1	12.
SAVDK.MAC;1	13.
SAVDL.MAC;1	18.
SAVDM.MAC;1	15.
SAVDP.MAC;1	14.
SAVDR.MAC;1	19.
SAVDRT.MAC;1	4.
SAVDS.MAC;1	12.
SAVDT.MAC;1	13.
SAVDU.MAC;1	28.
SAVDX.MAC;1	19.
SAVDY.MAC;1	18.
SAVE.MAC;1	62.
SAVEM.MAC;1	12.
SAVFN.MAC;1	16.
SAVINS.MAC;1	66.
SAVSIZ.MAC;1	26.
SAVST.MAC;1	14.
SAVSUB.MAC;1	35.
SAVTRC.MAC;1	2.
SMLGCL.MAC;1	15.
SPSOV.MAC;1	62.
SRTOV.MAC;1	27.
SSMOV.MAC;1	4.
STSUB.MAC;1	16.
ST1OV.MAC;1	35.
ST2OV.MAC;1	41.
ST3OV.MAC;1	41.
ST4OV.MAC;1	29.
SX1OV.MAC;1	42.
SX2OV.MAC;1	52.
SX3OV.MAC;1	18.
SX4OV.MAC;1	40.
SYMTB.MAC;1	14.
SYSOV.MAC;1	23.

BIG DISK RSXM35 (Cont.)

UFD [12,10]

SYSROT.MAC;1	10.
TASOV.MAC;1	36.
TIMOV.MAC;1	26.
TISUBS.MAC;1	4.
TKTN.MAC;1	49.
TPARS2.MAC;1	44.
TPDEB.MAC;1	5.
TPMAC2.MAC;1	32.
TPNUMB.MAC;1	8.
UFD.MAC;1	23.
UFDPAR.MAC;1	16.
UFDPTB.MAC;1	7.
UFDTP.MAC;1	6.
UNLCTL.MAC;1	29.
UNLFIL.MAC;1	6.
WRTMS.MAC;1	6.

Total of 4725./4731. blocks in 240. files

UFD [12,20]

FILASM.CMD;1	4.
FILLIBBLD.CMD;1	1.
ICPASM.CMD;1	12.
ICPLIBBLD.CMD;1	2.
INIASM.CMD;1	2.
INILIBBLD.CMD;1	1.
LOAASM.CMD;1	2.
MCRASM.CMD;1	14.
MCRLIBBLD.CMD;1	3.

Total of 41./41. blocks in 9. files

UFD [12,24]

FILASM.CMD;1	4.
FILLIBBLD.CMD;1	1.
ICPASM.CMD;1	12.
ICPLIBBLD.CMD;1	2.
INIASM.CMD;1	2.
INILIBBLD.CMD;1	1.
LOAASM.CMD;1	2.
MCRASM.CMD;1	14.
MCRLIBBLD.CMD;1	3.

Total of 41./41. blocks in 9. files

UFD [12,30]

Total of 0./0. blocks in 0. files

BIG DISK RSXM35 (Cont.)

UFD [12,34]

Total of 0./0. blocks in 0. files

UFD [12,40]

Total of 0./0. blocks in 0. files

UFD [14,10]

ATCMD.MAC;1	10.
ATCOM.MAC;1	4.
ATINIT.MAC;1	7.
ATPAGE.MAC;1	29.
GBCMD.MAC;1	2.
GBCOM.MAC;1	2.
GBINIT.MAC;1	1.
GBLATK.MAC;1	3.
GBLCHA.MAC;1	3.
GBLGBM.MAC;1	1.
GBLHLM.MAC;1	1.
GBLIOM.MAC;1	3.
GBLMDM.MAC;1	4.
GBLSSM.MAC;1	5.
GBLTHM.MAC;1	5.
GBPAGE.MAC;1	1.
HLCOM.MAC;1	1.
HLINIT.MAC;1	5.
HLPAGE.MAC;1	1.
IOCMD.MAC;1	6.
IOCOM.MAC;1	3.
IOINIT.MAC;1	11.
IOPAGE.MAC;1	33.
L36ATM.MAC;1	4.
L36CHA.MAC;1	2.
L36HLM.MAC;1	2.
L36MDM.MAC;1	5.
L36SSM.MAC;1	5.
L36THM.MAC;1	6.
MDCMD.MAC;1	6.
MDCOM.MAC;1	7.
MDINIT.MAC;1	25.
MDPAGE.MAC;1	57.
NUL11S.MAC;1	1.
REMAP.MAC;1	3.
RMDDEF.MAC;1	6.
RMDEMO.MAC;1	48.
RMDMAC.MAC;1	7.
RMDRIV.MAC;1	17.
RMDXCM.MAC;1	5.
SSCMD.MAC;1	3.

BIG DISK RSXM35 (Cont.)

UFD [14,10]

SSCOM.MAC;1	2.
SSINIT.MAC;1	6.
SSPAGE.MAC;1	30.
TERMID.MAC;1	8.
THCMD.MAC;1	6.
THCOM.MAC;1	6.
THF11L.MAC;1	15.
THINIT.MAC;1	13.
THPAGE.MAC;1	56.
V05ATM.MAC;1	4.
V05CHA.MAC;1	3.
V05HLM.MAC;1	2.
V05IOM.MAC;1	5.
V05MDM.MAC;1	5.
V1HATM.MAC;1	4.
V1HCHA.MAC;1	3.
V1HHLM.MAC;1	2.
V1HIOM.MAC;1	5.
V1HMDM.MAC;1	5.
V1HSSM.MAC;1	5.
V1HTHM.MAC;1	6.
V50ATM.MAC;1	4.
V50CHA.MAC;1	2.
V50HLM.MAC;1	2.
V50IOM.MAC;1	5.
V50MDM.MAC;1	5.
V50THM.MAC;1	6.
V52ATM.MAC;1	4.
V52CHA.MAC;1	2.
V52HLM.MAC;1	2.
V52IOM.MAC;1	5.
V52MDM.MAC;1	5.
V52SSM.MAC;1	5.
V52THM.MAC;1	6.

Total of 594./594. blocks in 75. files

UFD [14,20]

RMDASM.CMD;1	8.

Total of 8./8. blocks in 1. file

UFD [14,24]

RMDASM.CMD;1	11.

Total of 11./11. blocks in 1. file

BIG DISK RSXM35 (Cont.)

UFD [14,30]

Total of 0./0. blocks in 0. files

UFD [14,34]

Total of 0./0. blocks in 0. files

UFD [14,40]

Total of 0./0. blocks in 0. files

UFD [15,10]

ACNT.MAC;1	162.
BROAD.MAC;1	61.
HELLO.MAC;1	129.
HELROT.MAC;1	13.
HLP.MAC;1	8.
HLPSUB.MAC;1	78.
HSTTAB.MAC;1	23.
SHUFL.MAC;1	36.
SHUTUP.MAC;1	57.

Total of 567./567. blocks in 9. files

UFD [15,20]

MLTASM.CMD;1	1.
MLTLIBBLD.CMD;1	1.
SHUTUPASM.CMD;1	1.

Total of 3./3. blocks in 3. files

UFD [15,24]

MLTASM.CMD;1	1.
MLTLIBBLD.CMD;1	1.
SHUFLASM.CMD;1	1.
SHUTUPASM.CMD;1	1.

Total of 4./4. blocks in 4. files

BIG DISK RSXM35 (Cont.)

UFD [15,30]

Total of 0./0. blocks in 0. files

UFD [15,34]

Total of 0./0. blocks in 0. files

UFD [15,40]

Total of 0./0. blocks in 0. files

UFD [23,10]

ABORT.MAC;1	4.
ALFN.MAC;1	10.
ALFNUM.MAC;1	13.
ALL.MAC;1	5.
ALLOCATE.MAC;1	3.
AND.MAC;1	9.
ANDA.MAC;1	4.
APPEND.MAC;1	3.
ASSIGN.MAC;1	6.
ASTOV.MAC;1	6.
AT.MAC;1	2.
BACKUP.MAC;1	13.
BASIC.MAC;1	3.
BROADCAST.MAC;1	4.
CALLOV.MAC;1	7.
CANCEL.MAC;1	2.
CATCHALL.MAC;1	5.
CBM.MAC;1	3.
COBOL.MAC;1	21.
COD.MAC;1	3.
COMMAC.MAC;1	1.
COMMAND.MAC;1	10.
CONTINUE.MAC;1	2.
CONVERT.MAC;1	7.
COP.MAC;1	3.
COPY.MAC;1	4.
CORAL.MAC;1	15.
CREATE.MAC;1	4.
CSEP.MAC;1	2.
CUIC.MAC;1	3.
DATE.MAC;1	4.
DBUG.MAC;1	10.

BIG DISK RSXM35 (Cont.)

UFD [23,10]

DCL.MAC;1	2.
DCLDAT.MAC;1	22.
DCLMAC.MAC;1	56.
DCLMPL.MAC;1	1.
DEALLO.MAC;1	3.
DEASSIGN.MAC;1	4.
DEBUG.MAC;1	2.
DELETE.MAC;1	7.
DEV.MAC;1	2.
DIFFERENC.MAC;1	5.
DIRECTORY.MAC;1	5.
DISMOUNT.MAC;1	4.
DISPATCH.MAC;1	3.
DQBFE.MAC;1	10.
DQBFS.MAC;1	4.
DSPCMD.MAC;1	28.
EDIT.MAC;1	12.
EDOC.MAC;1	2.
ELEMENT.MAC;1	22.
EOL.MAC;1	3.
ERR.MAC;1	11.
ERRORO.MAC;1	5.
ERRORR.MAC;1	2.
ERR1.MAC;1	3.
FIL.MAC;1	3.
F[illegible]AC;1	3.
FLAGS.MAC;1	4.
FNAM.MAC;1	6.
FORMAT.MAC;1	9.
FORTRAN.MAC;1	17.
FSEP.MAC;1	2.
GTARG.MAC;1	5.
HELP.MAC;1	4.
HOLD.MAC;1	3.
IFIL.MAC;1	2.
INITIAL.MAC;1	10.
INSTALL.MAC;1	6.
JSR.MAC;1	3.
LAB.MAC;1	2.
LDCCD.MAC;1	5.
LIBRARY.MAC;1	12.
LINK.MAC;1	16.
LINK1.MAC;1	6.
LIT.MAC;1	17.
LOAD.MAC;1	5.
LOGIN.MAC;1	2.
LOGOUT.MAC;1	2.
LOVR.MAC;1	12.
LUIC.MAC;1	3.
MACRO.MAC;1	18.
MAP.MAC;1	24.
MATCH.MAC;1	7.
MCR.MAC;1	2.
MOUNT.MAC;1	14.
NEW.MAC;1	4.
NFIL.MAC;1	3.

BIG DISK RSXM35 (Cont.)

UFD [23,10]

NFT.MAC;1	3.
NLIT.MAC;1	3.
NOD.MAC;1	2.
ODEV.MAC;1	2.
OR.MAC;1	6.
OUIC.MAC;1	2.
PARSER.MAC;1	7.
PASCAL.MAC;1	7.
PIP.MAC;1	7.
PREPARSE.MAC;1	14.
PRI.MAC;1	2.
PRINT.MAC;1	11.
PRO.MAC;1	9.
PROC.MAC;1	2.
PURGE.MAC;1	3.
QIOBF.MAC;1	8.
QUA.MAC;1	7.
RELEASE.MAC;1	3.
REMOVE.MAC;1	2.
RENAME.MAC;1	3.
REQUEST.MAC;1	2.
RUN.MAC;1	7.
SCTBIT.MAC;1	7.
SEP.MAC;1	2.
SET.MAC;1	15.
SET1.MAC;1	21.
SHOW.MAC;1	21.
SORT.MAC;1	10.
SPAWN.MAC;1	5.
START.MAC;1	9.
STOP.MAC;1	8.
SUBMIT.MAC;1	9.
SY.MAC;1	3.
T.MAC;1	2.
TERM.MAC;1	2.
TI.MAC;1	3.
TIME.MAC;1	2.
TLINK.MAC;1	10.
TRANSL.MAC;1	5.
TSET.MAC;1	20.
TSHOW.MAC;1	16.
TST.MAC;1	5.
TYPE.MAC;1	3.
UC.MAC;1	2.
UD.MAC;1	5.
UNFIX.MAC;1	3.
UNLOCK.MAC;1	3.
VER.MAC;1	2.
WFIL.MAC;1	2.
WUIC.MAC;1	2.
WVER.MAC;1	2.
WXTN.MAC;1	2.
XCOPY.MAC;1	6.
XDCL.MAC;1	35.
XTN.MAC;1	2.

Total of 1002./1002. blocks in 143. files

BIG DISK RSXM35 (Cont.)

UFD [23,24]

DCL.CMD;1	4.
DCLASM.CMD;1	22.

Total of 26./26. blocks in 2. files

UFD [23,34]

Total of 0./0. blocks in 0. files

UFD [23,40]

Total of 0./0. blocks in 0. files

UFD [24,10]

TDX.MAC;1	108.

Total of 108./108. blocks in 1. file

UFD [24,20]

TDXASM.CMD;1	1.

Total of 1./1. blocks in 1. file

UFD [45,10]

KRATE.B2S;1	7.
KRATE.FTN;1	7.
KAADMP.MAC;1	12.
KAADRV.MAC;1	24.
KAAS03.MAC;1	5.
KADAGR.MAC;1	6.
KADDRV.MAC;1	14.
KADGCH.MAC;1	20.
KADINP.MAC;1	13.
KADIN0.MAC;1	6.
KADIN1.MAC;1	8.
KADIN2.MAC;1	6.
KADIN3.MAC;1	8.
KADIN4.MAC;1	6.

BIG DISK RSXM35 (Cont.)

UFD [45,10]

KADIN5.MAC;1	8.
KADSWP.MAC;1	7.
KAST.MAC;1	14.
KBFRMG.MAC;1	13.
KBFSTS.MAC;1	11.
KCLOKA.MAC;1	5.
KCLOKB.MAC;1	10.
KCOMM.MAC;1	5.
KCVADF.MAC;1	6.
KDIGO.MAC;1	10.
KDIO.MAC;1	12.
KDISWP.MAC;1	7.
KDOSWP.MAC;1	7.
KDRDRV.MAC;1	30.
KDSCAD.MAC;1	4.
KDSDGO.MAC;1	4.
KDVDF.MAC;1	11.
KEFQA.MAC;1	10.
KFLT16.MAC;1	6.
KGHIST.MAC;1	21.
KIESTO.MAC;1	4.
KKWDRV.MAC;1	18.
KLQSUB.MAC;1	7.
KMUL.MAC;1	3.
KPAA.MAC;1	7.
KPRE.MAC;1	4.
KRCLKB.MAC;1	5.
KRLOC.MAC;1	4.
KRWBF.MAC;1	12.
KSET.MAC;1	13.
KSTADC.MAC;1	7.
KSTB.MAC;1	7.
KSTIBF.MAC;1	5.
KSTOP.MAC;1	5.
KSUB.MAC;1	10.
KSWDF.MAC;1	13.
LABMAC.MAC;1	6.

Total of 473./473. blocks in 51. files

UFD [45,20]

ASMK.CMD;1	1.
KCLEAN.CMD;1	1.
KCOMBLD.CMD;1	1.
KLABMLB.CMD;1	1.
KLIBBLD.CMD;1	1.
KLIBRP.CMD;1	1.
K4ASM.CMD;1	1.

Total of 7./7. blocks in 7. files

BIG DISK RSXM35 (Cont.)

UFD [45,24]

ASMK.CMD;1	1.
KCLEAN.CMD;1	1.
KCOMBLD.CMD;1	1.
KLABMLB.CMD;1	1.
KLIBBLD.CMD;1	1.
KLIBRP.CMD;1	1.
K4ASM.CMD;1	1.

Total of 7./7. blocks in 7. files

UFD [45,30]

Total of 0./0. blocks in 0. files

UFD [45,34]

Total of 0./0. blocks in 0. files

UFD [104,10]

DEVSM1.CNF;1	28.
DEVUDA.CNF;1	15.
DISPATCH.CNF;1	46.
DSP1M1.CNF;1	40.
DSP2M1.CNF;1	17.
DSP3M1.CNF;1	17.
DSP4M1.CNF;1	15.
DSP5M1.CNF;1	19.
DSP6M1.CNF;1	7.
DSP7M1.CNF;1	27.
EML11.CNF;1	37.
ERK05.CNF;1	29.
ERK67.CNF;1	64.
ERL12.CNF;1	40.
ERM05.CNF;1	49.
ERM23.CNF;1	49.
ERM80.CNF;1	48.
ERP07.CNF;1	46.
ERP23.CNF;1	31.
ERP456.CNF;1	51.
ERRORM.CNF;1	20.
ERS11.CNF;1	24.
ERS34.CNF;1	36.
ERX01.CNF;1	21.
ERX02.CNF;1	28.

BIG DISK RSXM35 (Cont.)

UFD [104,10]

ETA11.CNF;1	16.
ETC11.CNF;1	19.
ETS11.CNF;1	57.
ETU58.CNF;1	26.
ETU77.CNF;1	38.
ET0310.CNF;1	26.
ET1645.CNF;1	38.
EUNKWN.CNF;1	15.
E11XX.CNF;1	30.
E1134.CNF;1	38.
E1144.CNF;1	38.
E1160.CNF;1	36.
E117X.CNF;1	40.
FINLM1.CNF;1	4.
FM1NM1.CNF;1	7.
FM1WM1.CNF;1	7.
FM2CM1.CNF;1	5.
FM3CM1.CNF;1	7.
FM4NM1.CNF;1	27.
FM4WM1.CNF;1	28.
INITM1.CNF;1	9.
MSCPAT.CNF;1	25.
MSCPBD.CNF;1	82.
MSCPEN.CNF;1	81.
MSCPTO.CNF;1	45.
NML11.CNF;1	6.
NRK67.CNF;1	4.
NRM05.CNF;1	5.
NRM23.CNF;1	5.
PARSEM.CNF;1	38.
PARS1M.CNF;1	29.
PARS2M.CNF;1	7.
PARS3M.CNF;1	13.
PRS2AM.CNF;1	33.
PRS2BM.CNF;1	32.
SELTM1.CNF;1	12.

Total of 1732./1732. blocks in 61. files

UFD [104,20]

ERRLOGASM.CMD;1	26.
ERRLOGLIB.CMD;1	3.

Total of 29./29. blocks in 2. files

UFD [104,30]

Total of 0./0. blocks in 0. files

BIG DISK RSXM35 (Cont.)

UFD [104,40]

Total of 0./0. blocks in 0. files

UFD [200,1]

ERASE.MAC;1	8.
GSA.MAC;1	18.
PARSE.MAC;1	9.
RENAME.MAC;1	10.
SEARCH.MAC;1	8.
ERASE.TSK;1	25.
PARSE.TSK;1	22.
RENAME.TSK;1	26.
SEARCH.TSK;1	25.

Total of 151./151. blocks in 9. files

UFD [200,200]

BLDLAINIT.CMD;1	14.
SGNBLDDRV.CMD;1	19.
SGNEXEC.CMD;1	175.
SGNICIS.CMD;1	45.
SGNIP.CMD;1	29.
SGNKLAB.CMD;1	70.
SGNPER.CMD;1	183.
SGNSTAND.CMD;1	4.
SGNTT.CMD;1	42.
SYSGEN.CMD;1	77.
SYSGEN2.CMD;1	78.
SYSGEN3.CMD;1	55.
FCSRES.MAC;1	11.

Total of 802./802. blocks in 13. files

Grand total of 33014./33089. blocks in 1144. files in 57. directories

F.2 DIRECTORY LISTING OF THE RK06/07 DISTRIBUTION KIT

All the files included in the RK06/07 distribution kit are listed as follows:

F.2.1 RSXM35

UFD [1,1]

KMCLP.BIN;1	6.
EXEMC.MLB;1	66.
FCS.OBJ;1	24.
FCSMBF.OBJ;1	32.
FCSMTA.OBJ;1	30.
LPA.OBJ;1	16.
LPS.OBJ;1	5.
ODT.OBJ;1	8.
PURICR.OBJ;1	6.
PURISA.OBJ;1	8.
PURPCS.OBJ;1	14.
PURUDC.OBJ;1	3.
TRACE.OBJ;1	3.
EXELIB.OLB;1	45.
SYSLIB.OLB;1	230.
VMLIB.OLB;1	16.
RSXMAC.SML;1	253.

Total of 765./765. blocks in 17. files

UFD [1,2]

RMSINSTAL.CMD;1	14.
STARTUP.CMD;1	6.
QIOSYM.MSG;1	29.

Total of 49./49. blocks in 3. files

UFD [1,3]

Total of 0./0. blocks in 0. files

UFD [1,4]

Total of 0./0. blocks in 0. files

UFD [1,6]

Total of 0./0. blocks in 0. files

RK06/07 RSXM35 (Cont.)

UFD [1,7]

Total of 0./0. blocks in 0. files

UFD [1,20]

ACFBLD.BLD;1	2.
ACNBLD.BLD;1	5.
ACOBLD.BLD;1	2.
ACSBLD.BLD;1	2.
BADBLD.BLD;1	2.
BOOBLD.BLD;1	5.
BROBLD.BLD;1	2.
BRUBLD.BLD;1	3.
BYEBLD.BLD;1	2.
CDABLD.BLD;1	20.
CFLBLD.BLD;1	9.
CMPBLD.BLD;1	6.
COTBLD.BLD;1	4.
CRFBLD.BLD;1	13.
DCLBLD.BLD;1	21.
DMOBLD.BLD;1	3.
DMPBLD.BLD;1	9.
DSCBLD.BLD;1	7.
EDIBLD.BLD;1	8.
EDTBLD.BLD;1	5.
ELIBLD.BLD;1	4.
ERLBLD.BLD;1	5.
FCPLRGBLD.BLD;1	9.
FCPMDLBLD.BLD;1	17.
FCPMINBLD.BLD;1	17.
FCPSMLBLD.BLD;1	11.
FCSRS1BLD.BLD;1	10.
FLXBLD.BLD;1	18.
FMTBLD.BLD;1	3.
FTBBLD.BLD;1	5.
F11MSGBLD.BLD;1	3.
HELBLD.BLD;1	8.
ICPBLD.BLD;1	8.
ICPCOMBLD.BLD;1	21.
ICQBLD.BLD;1	9.
INIBLD.BLD;1	7.
INSBLD.BLD;1	3.
IOXBLD.BLD;1	22.
LBRBLD.BLD;1	24.
LOABLD.BLD;1	4.
LPIBLD.BLD;1	2.
LPPBLD.BLD;1	11.
MACBLD.BLD;1	16.
MCMBLD.BLD;1	9.
MCRBLD.BLD;1	18.
MOUBLD.BLD;1	4.
MTABLD.BLD;1	17.
PATBLD.BLD;1	8.
PIPBLD.BLD;1	24.

RK06/07 RSXM35 (Cont.)

UFD [1,20]

PMDBLD.BLD;1	10.
PMTBLD.BLD;1	8.
PRTBLD.BLD;1	9.
QCLBLD.BLD;1	8.
QMGBLD.BLD;1	9.
QPRBLD.BLD;1	2.
RCTBLD.BLD;1	2.
RMDBLD.BLD;1	15.
RPTBLD.BLD;1	14.
SAVBLD.BLD;1	14.
SHFBLD.BLD;1	2.
SHUBLD.BLD;1	2.
SLPBLD.BLD;1	7.
STKBLD.BLD;1	28.
TDXBLD.BLD;1	2.
TKBBLD.BLD;1	31.
TKNBLD.BLD;1	2.
UFDBLD.BLD;1	2.
UNLBLD.BLD;1	2.
VFYBLD.BLD;1	9.
VMRBLD.BLD;1	12.
ZAPBLD.BLD;1	4.
ICBLD.CMD;1	1.
IPBLD.CMD;1	1.
ISBLD.CMD;1	1.
UDCBLD.CMD;1	1.
LPINIT.OBJ;1	4.
SYSROT.OBJ;1	1.
BAD.OLB;1	36.
BOO.OLB;1	11.
BRU.OLB;1	279.
CDA.OLB;1	144.
CMP.OLB;1	26.
CRF.OLB;1	40.
DCLO.OLB;1	493.
DCLR.OLB;1	54.
DMP.OLB;1	39.
DSC.OLB;1	164.
EDI.OLB;1	57.
EDTLIB.OLB;1	184.
ERL.OLB;1	35.
FCP.OLB;1	87.
FIL.OLB;1	124.
FLX.OLB;1	142.
FMT.OLB;1	55.
FTB.OLB;1	105.
F11MSG.OLB;1	9.
ICP11M.OLB;1	120.
INI.OLB;1	84.
INS.OLB;1	35.
IOX.OLB;1	127.
LAINIT.OLB;1	21.
LBR.OLB;1	70.
LOA.OLB;1	43.
MAC.OLB;1	149.
MCR.OLB;1	193.

RK06/07 RSXM35 (Cont.)

UFD [1,20]

MLTUSR.OLB;1	81.
MTA.OLB;1	102.
NEISLB.OLB;1	14.
PAT.OLB;1	34.
PIP.OLB;1	96.
PIPUTL.OLB;1	25.
PMD.OLB;1	32.
PRT.OLB;1	19.
RMD.OLB;1	70.
RPT.OLB;1	222.
SAV.OLB;1	65.
SLP.OLB;1	34.
TKB.OLB;1	308.
VFY.OLB;1	53.
VMR.OLB;1	226.
ZAP.OLB;1	33.

Total of 4990./5050. blocks in 121. files

UFD [1,24]

ICBLD.CMD;1	1.
IPBLD.CMD;1	1.
ISBLD.CMD;1	1.
UDCBLD.CMD;1	1.
LPINIT.OBJ;1	4.
SHUFL.OBJ;1	4.
SYSROT.OBJ;1	1.
TDX.OBJ;1	12.
ACF.OLB;1	31.
BOO.OLB;1	11.
COT.OLB;1	26.
ERL.OLB;1	35.
FCP.OLB;1	92.
FIL.OLB;1	124.
ICP11M.OLB;1	120.
INI.OLB;1	84.
INS.OLB;1	37.
LAINIT.OLB;1	21.
LOA.OLB;1	47.
LPP.OLB;1	57.
MCR.OLB;1	211.
MLTUSR.OLB;1	81.
MTA.OLB;1	102.
PIPUTL.OLB;1	25.
PMD.OLB;1	33.
QMG.OLB;1	74.
QMGCLI.OLB;1	89.
RCT.OLB;1	17.
RMD.OLB;1	98.
SAV.OLB;1	69.

Total of 1509./1513. blocks in 30. files

RK06/07 RSXM35 (Cont.)

UFD [1,30]

Total of 0./0. blocks in 0. files

UFD [1,34]

Total of 0./0. blocks in 0. files

UFD [1,50]

Total of 0./0. blocks in 0. files

UFD [1,54]

ACF.BSL;1	26.
SGNPARM.CMD;1	4.
DBDRV.STB;1	1.
DDDRV.STB;1	1.
DKDRV.STB;1	1.
DLDRV.STB;1	1.
DMDRV.STB;1	1.
DPDRV.STB;1	1.
DRDRV.STB;1	1.
DUDRV.STB;1	2.
DXDRV.STB;1	1.
DYDRV.STB;1	1.
LPDRV.STB;1	1.
MMDRV.STB;1	1.
MSDRV.STB;1	1.
MTDRV.STB;1	1.
RSX11M.STB;1	12.
RSX11M.SYS;1	258.
ACO.TSK;1	39.
ACS.TSK;1	14.
BAD.TSK;1	53.
BOO.TSK;1	33.
BRU.TSK;1	176.
CDA.TSK;1	166.
CMP.TSK;1	50.
CRF.TSK;1	36.
DBDRV.TSK;1	5.
DDDRV.TSK;1	6.
DKDRV.TSK;1	4.
DLDRV.TSK;1	4.
DMDRV.TSK;1	5.
DMO.TSK;1	15.
DMP.TSK;1	61.
DPDRV.TSK;1	3.
DRDRV.TSK;1	5.

RK06/07 RSXM35 (Cont.)

UFD [1,54]

DUDRV.TSK;1	11.
DXDRV.TSK;1	4.
DYDRV.TSK;1	5.
EDI.TSK;1	61.
FCPSML.TSK;1	96.
FLX.TSK;1	132.
FMT.TSK;1	68.
ICP.TSK;1	141.
INI.TSK;1	58.
INS.TSK;1	60.
IOX.TSK;1	109.
LBR.TSK;1	72.
LOA.TSK;1	29.
LPDRV.TSK;1	4.
MAC.TSK;1	89.
MCR.TSK;1	113.
MMDRV.TSK;1	7.
MOU.TSK;1	46.
MSDRV.TSK;1	7.
MTDRV.TSK;1	6.
PAT.TSK;1	45.
PIP.TSK;1	73.
RCT.TSK;1	11.
SAV.TSK;1	77.
SLP.TSK;1	48.
TKB.TSK;1	176.
TKN.TSK;1	18.
UFD.TSK;1	8.
UNL.TSK;1	23.
VFY.TSK;1	56.
VMR.TSK;1	156.
ZAP.TSK;1	51.

Total of 2850./2850. blocks in 67. files

UFD [1,60]

Total of 0./0. blocks in 0. files

UFD [1,64]

Total of 0./0. blocks in 0. files

RK06/07 RSXM35 (Cont.)

UFD [11,10]

ADDRV.MAC;1	10.
AFDRV.MAC;1	17.
ARDRV.MAC;1	61.
BFCTL.MAC;1	18.
CODRV.MAC;1	9.
CORAL.MAC;1	28.
CRASH.MAC;1	99.
CRDRV.MAC;1	36.
CTDRV.MAC;1	19.
CVRTM.MAC;1	5.
DBDRV.MAC;1	49.
DDDRV.MAC;1	71.
DFDRV.MAC;1	21.
DKDRV.MAC;1	23.
DLDRV.MAC;1	51.
DMDRV.MAC;1	71.
DPDRV.MAC;1	26.
DRABO.MAC;1	4.
DRASG.MAC;1	10.
DRATP.MAC;1	12.
DRATX.MAC;1	9.
DRCIN.MAC;1	21.
DRCLI.MAC;1	33.
DRCMT.MAC;1	7.
DRDAR.MAC;1	6.
DRDCP.MAC;1	8.
DRDRV.MAC;1	62.
DRDSP.MAC;1	47.
DREIF.MAC;1	43.
DREXP.MAC;1	17.
DRGCL.MAC;1	36.
DRGEF.MAC;1	19.
DRGIN.MAC;1	1.
DRGLI.MAC;1	6.
DRGPP.MAC;1	11.
DRGSS.MAC;1	3.
DRGTK.MAC;1	7.
DRGTP.MAC;1	16.
DRMAP.MAC;1	58.
DRMKT.MAC;1	11.
DRPUT.MAC;1	22.
DRQIO.MAC;1	75.
DRRAS.MAC;1	15.
DRREG.MAC;1	37.
DRREQ.MAC;1	5.
DRRES.MAC;1	12.
DRSED.MAC;1	26.
DRSMG.MAC;1	13.
DRSPW.MAC;1	85.
DRSST.MAC;1	9.
DRSUB.MAC;1	36.
DRSWS.MAC;1	7.
DSDRV.MAC;1	22.
DSSDI.MAC;1	7.
DTDRV.MAC;1	23.

RK06/07 RSXM35 (Cont.)

UFD [11,10]

DUDRV.MAC;1	227.
DXDRV.MAC;1	36.
DYDRV.MAC;1	50.
EMDRV.MAC;1	20.
ERROR.MAC;1	74.
ERSUB.MAC;1	40.
EXDBT.MAC;1	87.
EXESB.MAC;1	29.
GRDRV.MAC;1	49.
ICDRV.MAC;1	179.
ICOM.MAC;1	4.
INITL.MAC;1	33.
IOSUB.MAC;1	53.
IPCOM.MAC;1	2.
IPDRV.MAC;1	255.
IPMAP.MAC;1	2.
ISCOM.MAC;1	2.
ISDRV.MAC;1	32.
LADRV.MAC;1	90.
LKDRV.MAC;1	33.
LOADR.MAC;1	54.
LOWCR.MAC;1	6.
LPDRV.MAC;1	24.
LSDRV.MAC;1	74.
MDSUB.MAC;1	43.
MEMAP.MAC;1	39.
MFDRV.MAC;1	124.
MMDRV.MAC;1	81.
MSDRV.MAC;1	97.
MTDRV.MAC;1	59.
NLDRV.MAC;1	4.
NTDRV.MAC;1	6.
PANIC.MAC;1	16.
PARTY.MAC;1	21.
PLSUB.MAC;1	16.
PMT.MAC;1	81.
POWER.MAC;1	24.
PPDRV.MAC;1	14.
PRDRV.MAC;1	12.
QUEUE.MAC;1	22.
REQSB.MAC;1	105.
RSXMC(.MAC;1	9.
SSTSR.MAC;1	31.
SYSCM.MAC;1	37.
SYSDF.MAC;1	10.
SYSXT.MAC;1	99.
SYTAB.MAC;1	11.
TDSCH.MAC;1	20.
TTATT.MAC;1	73.
TTCAN.MAC;1	27.
TTCIS.MAC;1	19.
TTDAT.MAC;1	90.
TTDRV.MAC;1	262.
TTFP.MAC;1	15.
TTICH.MAC;1	122.

UFD [11,10]

TTINI.MAC;1	35.
TTJZ.MAC;1	7.
TTMAC.MAC;1	15.
TTMIS.MAC;1	7.
TTMOD.MAC;1	20.
TTODN.MAC;1	18.
TTOIS.MAC;1	14.
TTRW.MAC;1	83.
TTSUB.MAC;1	41.
TTTBL.MAC;1	20.
TTYH.MAC;1	35.
TTYHV.MAC;1	28.
TTYJ.MAC;1	6.
TTYL.MAC;1	16.
TTYZ.MAC;1	17.
UDCOM.MAC;1	7.
UDDRV.MAC;1	54.
XBDRV.MAC;1	29.
XLDRV.MAC;1	28.
XMDRV.MAC;1	66.
XPDRV.MAC;1	25.
XQDRV.MAC;1	41.
XUDRV.MAC;1	27.
XWDRV.MAC;1	27.

Total of 5165./5165. blocks in 134. files

UFD [11,20]

Total of 0./0. blocks in 0. files

UFD [11,24]

Total of 0./0. blocks in 0. files

UFD [11,30]

Total of 0./0. blocks in 0. files

UFD [11,34]

Total of 0./0. blocks in 0. files

RK06/07 RSXM35 (Cont.)

UFD [11,40]

Total of 0./0. blocks in 0. files

UFD [12,10]

DV20V.MAC;1	52.
SPS0V.MAC;1	62.
STSUB.MAC;1	16.
SX10V.MAC;1	42.
SX20V.MAC;1	52.
SX30V.MAC;1	18.
SX40V.MAC;1	40.

Total of 282./282. blocks in 7. files

UFD [12,20]

Total of 0./0. blocks in 0. files

UFD [12,24]

Total of 0./0. blocks in 0. files

UFD [12,40]

Total of 0./0. blocks in 0. files

UFD [200,200]

BLDLAINIT.CMD;1	14.
SGNBLDDRV.CMD;1	20.
SGNEXEC.CMD;1	175.
SGNICIS.CMD;1	45.
SGNIP.CMD;1	29.
SGNKLAB.CMD;1	70.
SGNPER.CMD;1	184.
SGNSTAND.CMD;1	4.
SGNTT.CMD;1	42.
SYSGEN.CMD;1	77.
SYSGEN2.CMD;1	78.
SYSGEN3.CMD;1	54.

Total of 792./792. blocks in 12. files

Grand total of 164278./16491. blocks in 392. files in 25. directories

F.2.2 CLISRC

UFD [1,1]

RSXMACID.MAC;1	38.
R0RMS1.MAC;1	12.
EXEMC.MLB;1	66.
RMSMAC.MLB;1	185.
DAPRLX.ODL;1	2.
DAP11X.ODL;1	6.
RMSRLX.ODL;1	2.
RMS11.ODL;1	85.
RMS11S.ODL;1	4.
RMS11X.ODL;1	6.
RMS12S.ODL;1	4.
RMS12X.ODL;1	6.
RMSDAP.OLB;1	95.
RMSLIB.OLB;1	214.
RSXMAC.SML;1	253.
DAPRES.STB;1	2.
RMSRES.STB;1	3.
DAPRES.TSK;1	40.
RMSRES.TSK;1	87.
RMSRESSUB.TSK;1	48.

Total of 1158./1163. blocks in 20. files

UFD [1,2]

STARTUP.CMD;1	6.
RMSDES.HLP;1	308.
HELP.ULB;1	2253.

Total of 2567./2567. blocks in 3. files

UFD [1,6]

ERRLOG.ULB;1	622.
ERRLOGETC.ULB;1	70.

Total of 692./692. blocks in 2. files

RK06/07 CLISRC (Cont.)

UFD [1,24]

BCKNON.CMD;1	1.
BCKNRN.CMD;1	1.
CNVNON.CMD;1	1.
CNVNOO.CMD;1	1.
CNVNRN.CMD;1	1.
CNVNRR.CMD;1	1.
DAPRES.CMD;1	1.
DEFNON.CMD;1	1.
DEFNRN.CMD;1	1.
DESNON.CMD;1	1.
DESNRN.CMD;1	1.
DSPNON.CMD;1	1.
DSPNRN.CMD;1	1.
IFLNON.CMD;1	1.
IFLNRN.CMD;1	1.
RMSRES.CMD;1	1.
RSTNON.CMD;1	1.
RSTNRN.CMD;1	1.
BCKNON.ODL;1	8.
BCKNRN.ODL;1	8.
CNVNON.ODL;1	10.
CNVNOO.ODL;1	5.
CNVNRN.ODL;1	5.
CNVNRR.ODL;1	5.
DAPRES.ODL;1	1.
DEFNON.ODL;1	3.
DEFNRN.ODL;1	3.
DESNON.ODL;1	6.
DESNRN.ODL;1	6.
DSPNON.ODL;1	7.
DSPNRN.ODL;1	7.
IFLNON.ODL;1	5.
IFLNRN.ODL;1	3.
RMSDES.ODL;1	9.
RMSODL.ODL;1	24.
RMSRES.ODL;1	11.
RSTNON.ODL;1	11.
RSTNRN.ODL;1	11.
RMSUTL.OLB;1	722.

Total of 888./888. blocks in 39. files

UFD [1,34]

DAPRES.MAP;1	16.
RMSRES.MAP;1	59.
RMSRESSUB.MAP;1	35.

Total of 110./110. blocks in 3. files

RK06/07 CLISRC (Cont.)

UFD [1,50]

Total of 0./0. blocks in 0. files

UFD [1,51]

BRU64K.STB;1	14.
BRU64K.SYS;1	258.

Total of 272./272. blocks in 2. files

UFD [1,54]

ACF.BSL;1	26.
DBDRV.STB;1	1.
DDDRV.STB;1	1.
DKDRV.STB;1	1.
DLDRV.STB;1	1.
DMDRV.STB;1	1.
DPDRV.STB;1	1.
DRDRV.STB;1	1.
DUDRV.STB;1	2.
DXDRV.STB;1	1.
DYDRV.STB;1	1.
LPDRV.STB;1	1.
MMDRV.STB;1	1.
MSDRV.STB;1	1.
MTDRV.STB;1	1.
RSX11M.STB;1	12.
RSX11M.SYS;1	258.
ACO.TSK;1	39.
ACS.TSK;1	14.
BAD.TSK;1	53.
BOO.TSK;1	33.
BRU.TSK;1	176.
CDA.TSK;1	166.
CMP.TSK;1	50.
CRF.TSK;1	36.
DBDRV.TSK;1	5.
DDDRV.TSK;1	6.
DKDRV.TSK;1	4.
DLDRV.TSK;1	4.
DMDRV.TSK;1	5.
DMO.TSK;1	15.
DMP.TSK;1	61.
DPDRV.TSK;1	3.
DRDRV.TSK;1	5.
DUDRV.TSK;1	11.
DXDRV.TSK;1	4.
DYDRV.TSK;1	5.
EDI.TSK;1	61.
FCPSML.TSK;1	96.

RK06/07 CLISRC (Cont.)

UIC [1,54]

FLX.TSK;1	132.
FMT.TSK;1	68.
ICP.TSK;1	141.
INI.TSK;1	58.
INS.TSK;1	60.
IOX.TSK;1	109.
LBR.TSK;1	72.
LOA.TSK;1	29.
LPDRV.TSK;1	4.
MAC.TSK;1	89.
MCR.TSK;1	113.
MMDRV.TSK;1	7.
MOU.TSK;1	46.
MSDRV.TSK;1	7.
MTDRV.TSK;1	6.
PAT.TSK;1	45.
PIP.TSK;1	73.
RCT.TSK;1	11.
RMSBCK.TSK;1	157.
RMSCNV.TSK;1	167.
RMSDEF.TSK;1	139.
RMSDES.TSK;1	241.
RMSDSP.TSK;1	142.
RMSIFL.TSK;1	136.
RMSRST.TSK;1	177.
SAV.TSK;1	77.
SLP.TSK;1	48.
TKB.TSK;1	176.
TKN.TSK;1	18.
UFD.TSK;1	8.
UNL.TSK;1	23.
VFY.TSK;1	56.
VMR.TSK;1	156.
ZAP.TSK;1	51.

Total of 4005./4005. blocks in 73. files

UFD [2,300]

FILE1.;1	1.
FILE2.;1	1.
CMP.CMD;1	2.
CONALL.CMD;1	7.
CONCNT.CMD;1	2.
DMP.CMD;1	1.
DSC.CMD;1	6.
FLX.CMD;1	3.
INSTSK.CMD;1	1.
INTERA.CMD;1	4.
LBR.CMD;1	2.
LOAD.CMD;1	10.
MCRTST.CMD;1	6.
PAT.CMD;1	2.
PMD.CMD;1	5.

RK06/07 CLISRC (Cont.)

UIC [2,300]

SIOE.CMD;1	9.
SLP.CMD;1	2.
SLPCMD.CMD;1	1.
STRTUP.CMD;1	10.
UETP.CMD;1	25.
UNLOAD.CMD;1	2.
UTIL.CMD;1	1.
CRTEST.MAC;1	1.
DEFINE.MAC;1	49.
DUMMY.MAC;1	1.
LOGGER.MAC;1	26.
MACRO1.MAC;1	1.
MACRO2.MAC;1	1.
MACRO3.MAC;1	1.
NUL1.MAC;1	19.
NUL2.MAC;1	19.
NUL3.MAC;1	19.
OBJCT1.MAC;1	1.
OBJCT2.MAC;1	1.
OBJCT3.MAC;1	1.
PATCH1.MAC;1	1.
QTRUN.MAC;1	28.
PATCH1.OBJ;1	1.
DEVM.SAM;1	3.
UETPCOR.TMP;1	18.
ASRC.XXX;1	1.
PATCHD.XXX;1	1.
SLPDAT.XXX;1	2.
SLPOUT.XXX;1	3.

Total of 300./300. blocks in 44. files

UFD [11,10]

Total of 0./0. blocks in 0. files

UFD [12,10]

INDSYS.CLB;1	103.
ABOOV.MAC;1	24.
ACS.MAC;1	23.
ACTFIL.MAC;1	6.
ALLOV.MAC;1	27.
ALLSUB.MAC;1	21.
ALTOV.MAC;1	15.
ASNOV.MAC;1	34.
ATLOV.MAC;1	29.
BOOT.MAC;1	29.
BOOTRC.MAC;1	2.
BOTPH2.MAC;1	19.
BRKOV.MAC;1	3.

RK06/07 CLISRC (Cont.)

UIC [12,10]

BYE.MAC;1	45.
CBTO.MAC;1	7.
CDT2B.MAC;1	6.
CLIOV.MAC;1	76.
CLQOV.MAC;1	19.
COLOG.MAC;1	9.
COT2B.MAC;1	4.
CRETSK.MAC;1	16.
DEAOV.MAC;1	10.
DEVOV.MAC;1	47.
DFSYM.MAC;1	19.
DISMNT.MAC;1	79.
DV2OV.MAC;1	52.
EDCKP.MAC;1	4.
ERMSG.MAC;1	15.
ERRMSG.MAC;1	10.
ERROV.MAC;1	13.
FILBN.MAC;1	20.
FIXOV.MAC;1	30.
FLAOV.MAC;1	19.
FMTDV.MAC;1	4.
FNDUCB.MAC;1	8.
GETNUM.MAC;1	4.
GNBLK.MAC;1	5.
GTBYT.MAC;1	6.
GTMNM.MAC;1	4.
GTTSK.MAC;1	8.
HELLO.MAC;1	146.
ICBDEF.MAC;1	5.
ICPASK.MAC;1	6.
ICPASV.MAC;1	14.
ICPAS1.MAC;1	12.
ICPAS2.MAC;1	10.
ICPAS3.MAC;1	11.
ICPAS4.MAC;1	9.
ICPAS5.MAC;1	7.
ICPATS.MAC;1	11.
ICPBLK.MAC;1	8.
ICPCHA.MAC;1	5.
ICPCHN.MAC;1	9.
ICPENB.MAC;1	16.
ICPERA.MAC;1	5.
ICPERR.MAC;1	18.
ICPEXF.MAC;1	14.
ICPEXI.MAC;1	7.
ICPFCL.MAC;1	7.
ICPFDC.MAC;1	11.
ICPFEX.MAC;1	4.
ICPFIL.MAC;1	2.
ICPFMI.MAC;1	2.
ICPFMO.MAC;1	2.
ICPFMS.MAC;1	27.
ICPFMX.MAC;1	4.
ICPFOP.MAC;1	18.
ICPFUT.MAC;1	22.

RK06/07 CLISRC (Cont.)

UIC [12,10]

ICPF10.MAC;1	2.
ICPF52.MAC;1	1.
ICPGNB.MAC;1	6.
ICPGOT.MAC;1	14.
ICPGTK.MAC;1	13.
ICPGTN.MAC;1	4.
ICPIF1.MAC;1	9.
ICPIF2.MAC;1	6.
ICPIF3.MAC;1	8.
ICPIF4.MAC;1	8.
ICPIMP.MAC;1	30.
ICPINX.MAC;1	6.
ICPIN2.MAC;1	8.
ICPIN3.MAC;1	15.
ICPIN4.MAC;1	18.
ICPIN5.MAC;1	6.
ICPMCR.MAC;1	7.
ICPMEM.MAC;1	5.
ICPMEN.MAC;1	2.
ICPNEC.MAC;1	1.
ICPNEI.MAC;1	1.
ICPNEN.MAC;1	2.
ICPNET.MAC;1	14.
ICPNEX.MAC;1	3.
ICPNPR.MAC;1	1.
ICPNP1.MAC;1	5.
ICPONR.MAC;1	24.
ICPPAR.MAC;1	15.
ICPPDW.MAC;1	14.
ICPPOP.MAC;1	11.
ICPPO1.MAC;1	8.
ICPPRC.MAC;1	13.
ICPPRE.MAC;1	29.
ICPPRS.MAC;1	6.
ICPROT.MAC;1	28.
ICPSET.MAC;1	6.
ICPSTP.MAC;1	3.
ICPSUB.MAC;1	28.
ICPSUT.MAC;1	5.
ICPSU1.MAC;1	20.
ICPSU2.MAC;1	19.
ICPSU3.MAC;1	18.
ICPSU4.MAC;1	8.
ICPSU5.MAC;1	4.
ICPSU6.MAC;1	5.
ICPSYC.MAC;1	14.
ICPSYT.MAC;1	25.
ICPSY1.MAC;1	26.
ICPSY2.MAC;1	8.
ICPSY3.MAC;1	12.
ICPTDV.MAC;1	19.
ICPTES.MAC;1	11.
ICPTPA.MAC;1	7.
ICPVEC.MAC;1	2.
ICPWPT.MAC;1	10.

RK06/07 CLISRC (Cont.)

UIC [12,10]

ICPXMD.MAC;1	4.
INIALL.MAC;1	23.
INIBAD.MAC;1	55.
INIBIT.MAC;1	35.
INIGCL.MAC;1	69.
INIHOM.MAC;1	23.
INIMAG.MAC;1	42.
ININDX.MAC;1	38.
INIPAR.MAC;1	119.
INIROT.MAC;1	64.
INIUPD.MAC;1	41.
INSBF.MAC;1	6.
INSCM.MAC;1	10.
INSFL.MAC;1	17.
INSFSR.MAC;1	2.
INSGC.MAC;1	2.
INSHD.MAC;1	30.
INSLB.MAC;1	72.
INSPS.MAC;1	26.
INSROT.MAC;1	19.
IODAT.MAC;1	7.
KEYWD.MAC;1	5.
LDBUF.MAC;1	6.
LDCTL.MAC;1	27.
LDDRV.MAC;1	26.
LDFIL.MAC;1	8.
LDFIN.MAC;1	33.
LDLDB.MAC;1	22.
LDUIC.MAC;1	3.
LKLST.MAC;1	7.
LN1OV.MAC;1	9.
LUNOV.MAC;1	13.
MCRDEF.MAC;1	5.
MCRDIS.MAC;1	79.
MCROOT.MAC;1	10.
MCROV.MAC;1	59.
MDPOV.MAC;1	10.
MGCML.MAC;1	35.
MOUCLS.MAC;1	20.
MOUDAT.MAC;1	18.
MOUDIS.MAC;1	32.
MOUDSK.MAC;1	26.
MOUFOR.MAC;1	30.
MOUMSG.MAC;1	16.
MOUPAR.MAC;1	43.
MOUPRE.MAC;1	4.
MOUROT.MAC;1	9.
MOUSUB.MAC;1	52.
MOUTAP.MAC;1	38.
MSGOUT.MAC;1	12.
NETSUB.MAC;1	2.
OPEOV.MAC;1	62.
PAROV.MAC;1	24.
PR1OV.MAC;1	8.
RAPOV.MAC;1	14.

RK06/07 CLISRC (Cont.)

UIC [12,10]

REAOV.MAC;1	7.
REDOV.MAC;1	12.
REQCOT.MAC;1	11.
RPSOV.MAC;1	28.
RUNOV.MAC;1	26.
SAVBOT.MAC;1	17.
SAVCPU.MAC;1	13.
SAVC1.MAC;1	20.
SAVC2.MAC;1	17.
SAVC3.MAC;1	6.
SAVDB.MAC;1	14.
SAVDF.MAC;1	12.
SAVDK.MAC;1	13.
SAVDL.MAC;1	18.
SAVDM.MAC;1	15.
SAVDP.MAC;1	14.
SAVDR.MAC;1	19.
SAVDRT.MAC;1	4.
SAVDS.MAC;1	12.
SAVDT.MAC;1	13.
SAVDU.MAC;1	28.
SAVDX.MAC;1	19.
SAVDY.MAC;1	18.
SAVE.MAC;1	62.
SAVEM.MAC;1	12.
SAVFN.MAC;1	16.
SAVINS.MAC;1	66.
SAVSIZ.MAC;1	26.
SAVST.MAC;1	14.
SAVSUB.MAC;1	35.
SAVTRC.MAC;1	2.
SMLGCL.MAC;1	15.
SPSOV.MAC;1	62.
SRTOV.MAC;1	27.
SSMOV.MAC;1	4.
STSUB.MAC;1	16.
ST1OV.MAC;1	35.
ST2OV.MAC;1	41.
ST3OV.MAC;1	41.
ST4OV.MAC;1	29.
SX1OV.MAC;1	42.
SX2OV.MAC;1	52.
SX3OV.MAC;1	18.
SX4OV.MAC;1	40.
SYMTB.MAC;1	14.
SYSOV.MAC;1	23.
SYSROT.MAC;1	10.
TASOV.MAC;1	36.
TIMOV.MAC;1	26.
TISUBS.MAC;1	4.
TKTN.MAC;1	49.
TPARS2.MAC;1	44.
TPDEB.MAC;1	5.
TPMAC2.MAC;1	32.

RK06/07 CLISRC (Cont.)

UIC [12,10]

TPNUMB.MAC;1	8.
UFD.MAC;1	23.
UFDPAR.MAC;1	16.
UFDPTB.MAC;1	7.
UFDTP.MAC;1	6.
UNLCTL.MAC;1	29.
UNLFIL.MAC;1	6.
WRTMS.MAC;1	6.

Total of 4725./4731. blocks in 240. files

UFD [12,20]

FILASM.CMD;1	4.
FILLIBBLD.CMD;1	1.
ICPASM.CMD;1	12.
ICPLIBBLD.CMD;1	2.
INIASM.CMD;1	2.
INILIBBLD.CMD;1	1.
LOAASM.CMD;1	2.
MCRASM.CMD;1	14.
MCRLIBBLD.CMD;1	3.

Total of 41./41. blocks in 9. files

UFD [12,24]

FILASM.CMD;1	4.
FILLIBBLD.CMD;1	1.
ICPASM.CMD;1	12.
ICPLIBBLD.CMD;1	2.
INIASM.CMD;1	2.
INILIBBLD.CMD;1	1.
LOAASM.CMD;1	2.
MCRASM.CMD;1	14.
MCRLIBBLD.CMD;1	3.

Total of 41./41. blocks in 9. files

UFD [12,30]

Total of 0./0. blocks in 0. files

UFD [12,34]

Total of 0./0. blocks in 0. files

RK06/07 CLISRC (Cont.)

UFD [12,40]

Total of 0./0. blocks in 0. files

UFD [14,10]

ATCMD.MAC;1	10.
ATCOM.MAC;1	4.
ATINIT.MAC;1	7.
ATPAGE.MAC;1	29.
GBCMD.MAC;1	2.
GBCOM.MAC;1	2.
GBINIT.MAC;1	1.
GBLATM.MAC;1	3.
GBLCHA.MAC;1	3.
GBLGBM.MAC;1	1.
GBLHLM.MAC;1	1.
GBLIOM.MAC;1	3.
GBLMDM.MAC;1	4.
GBLSSM.MAC;1	5.
GBLTHM.MAC;1	5.
GBPAGE.MAC;1	1.
HLCOM.MAC;1	1.
HLINIT.MAC;1	5.
HLPAGE.MAC;1	1.
IOCMD.MAC;1	6.
IOCOM.MAC;1	3.
IOINIT.MAC;1	11.
IOPAGE.MAC;1	33.
L36ATM.MAC;1	4.
L36CHA.MAC;1	2.
L36HLM.MAC;1	2.
L36MDM.MAC;1	5.
L36SSM.MAC;1	5.
L36THM.MAC;1	6.
MDCMD.MAC;1	6.
MDCOM.MAC;1	7.
MDINIT.MAC;1	25.
MDPAGE.MAC;1	57.
NULL1S.MAC;1	1.
REMAP.MAC;1	3.
RMDDEF.MAC;1	6.
RMDEMO.MAC;1	48.
RMDMAC.MAC;1	7.
RMDRIV.MAC;1	17.
RMDXCM.MAC;1	5.
SSCMD.MAC;1	3.
SSCOM.MAC;1	2.
SSINIT.MAC;1	6.
SSPAGE.MAC;1	30.
TERMID.MAC;1	8.
THCMD.MAC;1	6.
THCOM.MAC;1	6.

RK06/07 CLISRC (Cont.)

UIC [14,10]

THF11L.MAC;1	15.
THINIT.MAC;1	13.
THPAGE.MAC;1	56.
V05ATM.MAC;1	4.
V05CHA.MAC;1	3.
V05HLM.MAC;1	2.
V05IOM.MAC;1	5.
V05MDM.MAC;1	5.
V1HATM.MAC;1	4.
V1HCHA.MAC;1	3.
V1HHLM.MAC;1	2.
V1HIOM.MAC;1	5.
V1HMDM.MAC;1	5.
V1HSSM.MAC;1	5.
V1HTHM.MAC;1	6.
V50ATM.MAC;1	4.
V50CHA.MAC;1	2.
V50HLM.MAC;1	2.
V50IOM.MAC;1	5.
V50MDM.MAC;1	5.
V50THM.MAC;1	6.
V52ATM.MAC;1	4.
V52CHA.MAC;1	2.
V52HLM.MAC;1	2.
V52IOM.MAC;1	5.
V52MDM.MAC;1	5.
V52SSM.MAC;1	5.
V52THM.MAC;1	6.

Total of 594./594. blocks in 75. files

UFD [14,20]

RMDASM.CMD;1	8.

Total of 8./8. blocks in 1. file

UFD [14,24]

RMDASM.CMD;1	11.

Total of 11./11. blocks in 1. file

UFD [14,30]

Total of 0./0. blocks in 0. files

RK06/07 CLISRC (Cont.)

UFD [14,34]

Total of 0./0. blocks in 0. files

UFD [14,40]

Total of 0./0. blocks in 0. files

UFD [15,10]

ACNT.MAC;1	162.
BROAD.MAC;1	61.
HELLO.MAC;1	129.
HELROT.MAC;1	13.
HLP.MAC;1	8.
HLPSUB.MAC;1	78.
HSTTAB.MAC;1	23.
SHUFL.MAC;1	36.
SHUTUP.MAC;1	57.

Total of 567./567. blocks in 9. files

UFD [15,20]

MLTASM.CMD;1	1.
MLTLIBBLD.CMD;1	1.
SHUTUPASM.CMD;1	1.

Total of 3./3. blocks in 3. files

UFD [15,24]

MLTASM.CMD;1	1.
MLTLIBBLD.CMD;1	1.
SHUFLASM.CMD;1	1.
SHUTUPASM.CMD;1	1.

Total of 4./4. blocks in 4. files

UFD [15,30]

Total of 0./0. blocks in 0. files

RK06/07 CLISRC (Cont.)

UFD [15,34]

Total of 0./0. blocks in 0. files

UFD [15,40]

Total of 0./0. blocks in 0. files

UFD [23,10]

ABORT.MAC;1	4.
ALFN.MAC;1	10.
ALFNUM.MAC;1	13.
ALL.MAC;1	5.
ALLOCATE.MAC;1	3.
AND.MAC;1	9.
ANDA.MAC;1	4.
APPEND.MAC;1	3.
ASSIGN.MAC;1	6.
ASTOV.MAC;1	6.
AT.MAC;1	2.
BACKUP.MAC;1	13.
BASIC.MAC;1	3.
BROADCAST.MAC;1	4.
CALLOV.MAC;1	7.
CANCEL.MAC;1	2.
CATCHALL.MAC;1	5.
CBM.MAC;1	3.
COBOL.MAC;1	21.
COD.MAC;1	3.
COMMAC.MAC;1	1.
COMMAND.MAC;1	10.
CONTINUE.MAC;1	2.
CONVERT.MAC;1	7.
COP.MAC;1	3.
COPY.MAC;1	4.
CORAL.MAC;1	15.
CREATE.MAC;1	4.
CSEP.MAC;1	2.
CUIC.MAC;1	3.
DATE.MAC;1	4.
DBUG.MAC;1	10.
DCL.MAC;1	2.
DCLDAT.MAC;1	22.
DCLMAC.MAC;1	56.
DCLMPL.MAC;1	1.
DEALLO.MAC;1	3.
DEASSIGN.MAC;1	4.
DEBUG.MAC;1	2.
DELETE.MAC;1	7.

RK06/07 CLISRC (Cont.)

UIC [23,10]

DEV.MAC;1	2.
DIFFERENC.MAC;1	5.
DIRECTORY.MAC;1	5.
DISMOUNT.MAC;1	4.
DISPATCH.MAC;1	3.
DQBFE.MAC;1	10.
DQBFS.MAC;1	4.
DSPCMD.MAC;1	28.
EDIT.MAC;1	12.
EDOC.MAC;1	2.
ELEMENT.MAC;1	22.
EOL.MAC;1	3.
ERR.MAC;1	11.
ERRORO.MAC;1	5.
ERRORR.MAC;1	2.
ERR1.MAC;1	3.
FIL.MAC;1	3.
FIX.MAC;1	3.
FLAGS.MAC;1	4.
FNAM.MAC;1	6.
FORMAT.MAC;1	9.
FORTRAN.MAC;1	17.
FSEP.MAC;1	2.
GTARG.MAC;1	5.
HELP.MAC;1	4.
HOLD.MAC;1	3.
IFIL.MAC;1	2.
INITIAL.MAC;1	16.
INSTALL.MAC;1	6.
JSR.MAC;1	3.
LAB.MAC;1	2.
LDCCD.MAC;1	5.
LIBRARY.MAC;1	12.
LINK.MAC;1	16.
LINK1.MAC;1	6.
LIT.MAC;1	17.
LOAD.MAC;1	5.
LOGIN.MAC;1	2.
LOGOUT.MAC;1	2.
LOVR.MAC;1	12.
LUIC.MAC;1	3.
MACRO.MAC;1	18.
MAP.MAC;1	24.
MATCH.MAC;1	7.
MCR.MAC;1	2.
MOUNT.MAC;1	14.
NEW.MAC;1	4.
NFIL.MAC;1	3.
NFT.MAC;1	3.
NLIT.MAC;1	3.
NOD.MAC;1	2.
ODEV.MAC;1	2.
OR.MAC;1	6.
OUIC.MAC;1	2.
PARSER.MAC;1	7.

RK06/07 CLISRC (Cont.)

UIC [23,10]

PASCAL.MAC;1	7.
PIP.MAC;1	7.
PREPARSE.MAC;1	14.
PRI.MAC;1	2.
PRINT.MAC;1	11.
PRO.MAC;1	9.
PROC.MAC;1	2.
PURGE.MAC;1	3.
QIOBF.MAC;1	8.
QUA.MAC;1	7.
RELEASE.MAC;1	3.
REMOVE.MAC;1	2.
RENAME.MAC;1	3.
REQUEST.MAC;1	2.
RUN.MAC;1	7.
SCTBIT.MAC;1	7.
SEP.MAC;1	2.
SET.MAC;1	15.
SET1.MAC;1	21.
SHOW.MAC;1	21.
SORT.MAC;1	10.
SPAWN.MAC;1	5.
START.MAC;1	9.
STOP.MAC;1	8.
SUBMIT.MAC;1	9.
SY.MAC;1	3.
T.MAC;1	2.
TERM.MAC;1	2.
TI.MAC;1	3.
TIME.MAC;1	2.
TLINK.MAC;1	10.
TRANSL.MAC;1	5.
TSET.MAC;1	20.
TSHOW.MAC;1	16.
TST.MAC;1	5.
TYPE.MAC;1	3.
UIC.MAC;1	2.
UND.MAC;1	5.
UNFIX.MAC;1	3.
UNLOCK.MAC;1	3.
VER.MAC;1	2.
WFIL.MAC;1	2.
WUIC.MAC;1	2.
WVER.MAC;1	2.
WXTN.MAC;1	2.
XCOPY.MAC;1	6.
XDCL.MAC;1	35.
XTN.MAC;1	2.

Total of 1002./1002. blocks in 143. files

RK06/07 CLISRC (Cont.)

UFD [23,24]

DCL.CMD;1	4.
DCLASM.CMD;1	22.

Total of 26./26. blocks in 2. files

UFD [23,34]

Total of 0./0. blocks in 0. files

UFD [23,40]

Total of 0./0. blocks in 0. files

UFD [24,10]

TDX.MAC;1	108.

Total of 108./108. blocks in 1. file

UFD [24,20]

TDXASM.CMD;1	1.

Total of 1./1. blocks in 1. file

UFD [45,10]

KRATE.B2S;1	7.
KRATE.FTN;1	7.
KAADMP.MAC;1	12.
KAADRV.MAC;1	24.
KAAS03.MAC;1	5.
KADAGR.MAC;1	6.
KADDRV.MAC;1	14.
KADGCH.MAC;1	20.
KADINP.MAC;1	13.
KADIN0.MAC;1	6.
KADIN1.MAC;1	8.
KADIN2.MAC;1	6.
KADIN3.MAC;1	8.
KADIN4.MAC;1	6.
KADIN5.MAC;1	8.
KADSWP.MAC;1	7.

RK06/07 CLISRC (Cont.)

UIC [45,10]

KAST.MAC;1	14.
KBFRMG.MAC;1	13.
KBFSTS.MAC;1	11.
KCLOKA.MAC;1	5.
KCLOKB.MAC;1	10.
KCOMM.MAC;1	5.
KCVADF.MAC;1	6.
KDIGO.MAC;1	10.
KDIO.MAC;1	12.
KDISWP.MAC;1	7.
KDOSWP.MAC;1	7.
KDRDRV.MAC;1	30.
KDSCAD.MAC;1	4.
KDSDGO.MAC;1	4.
KDVDF.MAC;1	11.
KEFQA.MAC;1	10.
KFLT16.MAC;1	6.
KGHIST.MAC;1	21.
KIESTO.MAC;1	4.
KKWDRV.MAC;1	18.
KLQSUB.MAC;1	7.
KMUL.MAC;1	3.
KPAA.MAC;1	7.
KPRE.MAC;1	4.
KRCLKB.MAC;1	5.
KRLOC.MAC;1	4.
KRWBF.MAC;1	12.
KSET.MAC;1	13.
KSTADC.MAC;1	7.
KSTB.MAC;1	7.
KSTIBF.MAC;1	5.
KSTOP.MAC;1	5.
KSUB.MAC;1	10.
KSWDF.MAC;1	13.
LABMAC.MAC;1	6.

Total of 473./473. blocks in 51. files

UFD [45,20]

ASMK.CMD;1	1.
KCLEAN.CMD;1	1.
KCOMBLD.CMD;1	1.
KLABMLB.CMD;1	1.
KLIBBLD.CMD;1	1.
KLIBRP.CMD;1	1.
K4ASM.CMD;1	1.

Total of 7./7. blocks in 7. files

RK06/07 CLISRC (Cont.)

UFD [45,24]

ASMK.CMD;1	1.
KCLEAN.CMD;1	1.
KCOMBLD.CMD;1	1.
KLABMLB.CMD;1	1.
KLIBBLD.CMD;1	1.
KLIBRP.CMD;1	1.
K4ASM.CMD;1	1.

Total of 7./7. blocks in 7. files

UFD [45,30]

Total of 0./0. blocks in 0. files

UFD [45,34]

Total of 0./0. blocks in 0. files

UFD [104,10]

DEVSM1.CNF;1	28.
DEVUDA.CNF;1	15.
DISPATCH.CNF;1	46.
DSP1M1.CNF;1	40.
DSP2M1.CNF;1	17.
DSP3M1.CNF;1	17.
DSP4M1.CNF;1	15.
DSP5M1.CNF;1	19.
DSP6M1.CNF;1	7.
DSP7M1.CNF;1	27.
EML11.CNF;1	37.
ERK05.CNF;1	29.
ERK67.CNF;1	64.
ERL12.CNF;1	40.
ERM05.CNF;1	49.
ERM23.CNF;1	49.
ERM80.CNF;1	48.
ERP07.CNF;1	46.
ERP23.CNF;1	31.
ERP456.CNF;1	51.
ERRORM.CNF;1	20.
ERS11.CNF;1	24.
ERS34.CNF;1	36.
ERX01.CNF;1	21.
ERX02.CNF;1	28.
ETA11.CNF;1	16.
ETC11.CNF;1	19.

RK06/07 CLISRC (Cont.)

UIC [104,10]

ETS11.CNF;1	57.
ETU58.CNF;1	26.
ETU77.CNF;1	38.
ET0310.CNF;1	26.
ET1645.CNF;1	38.
EUNKWN.CNF;1	15.
E11XX.CNF;1	30.
E1134.CNF;1	38.
E1144.CNF;1	38.
E1160.CNF;1	36.
E117X.CNF;1	40.
FINLM1.CNF;1	4.
FM1NM1.CNF;1	7.
FM1WM1.CNF;1	7.
FM2CM1.CNF;1	5.
FM3CM1.CNF;1	7.
FM4NM1.CNF;1	27.
FM4WM1.CNF;1	28.
INITM1.CNF;1	9.
MSCPAT.CNF;1	25.
MSCPBD.CNF;1	82.
MSCPEN.CNF;1	81.
MSCPTO.CNF;1	45.
NML11.CNF;1	6.
NRK67.CNF;1	4.
NRM05.CNF;1	5.
NRM23.CNF;1	5.
PARSEM.CNF;1	38.
PARS1M.CNF;1	29.
PARS2M.CNF;1	7.
PARS3M.CNF;1	13.
PRS2AM.CNF;1	33.
PRS2BM.CNF;1	32.
SELTM1.CNF;1	12.

Total of 1732./1732. blocks in 61. files

UFD [104,20]

ERRLOGASM.CMD;1	26.
ERRLOGLIB.CMD;1	3.

Total of 29./29. blocks in 2. files

UFD [104,30]

Total of 0./0. blocks in 0. files

RK06/07 CLISRC (Cont.)

UFD [104,40]

Total of 0./0. blocks in 0. files

UFD [200,1]

ERASE.MAC;1	8.
GSA.MAC;1	18.
PARSE.MAC;1	9.
RENAME.MAC;1	10.
SEARCH.MAC;1	8.
ERASE.TSK;1	25.
PARSE.TSK;1	22.
RENAME.TSK;1	26.
SEARCH.TSK;1	25.

Total of 151./151. blocks in 9. files

UFD [200,200]

FCSRES.MAC;1	11.

Total of 11./11. blocks in 1. file

Grand total of 20041./20052. blocks in 828. files in 45. directories

RL01/02 RSXM35

F.3 DIRECTORY LISTING OF THE RL01/02 DISTRIBUTION KIT

All the files included in the RL01/02 distribution kit are listed as follows:

F.3.1 RSXM35

UFD [1,1]

EXEMC.MLB;1	66.
ODT.OBJ;1	8.
TRACE.OBJ;1	3.
EXELIB.OLB;1	45.
SYSLIB.OLB;1	230.
VMLIB.OLB;1	16.
RSXMAC.SML;1	253.

Total of 621./621. blocks in 7. files

UFD [1,2]

RMSINSTAL.CMD;1	14.
STARTUP.CMD;1	6.
QIOSYM.MSG;1	29.

Total of 49./49. blocks in 3. files

UFD [1,3]

Total of 0./0. blocks in 0. files

UFD [1,4]

Total of 0./0. blocks in 0. files

UFD [1,6]

Total of 0./0. blocks in 0. files

UFD [1,7]

Total of 0./0. blocks in 0. files

RL01/02 RSXM35 (Cont.)

UFD [1,20]

Total of 0./0. blocks in 0. files

UFD [1,24]

Total of 0./0. blocks in 0. files

UFD [1,30]

Total of 0./0. blocks in 0. files

UFD [1,34]

Total of 0./0. blocks in 0. files

UFD [1,50]

Total of 0./0. blocks in 0. files

UFD [1,54]

ACF.BSL;1	26.
SGNPARM.CMD;1	4.
DBDRV.STB;1	1.
DDDRV.STB;1	1.
DKDRV.STB;1	1.
DLDRV.STB;1	1.
DMDRV.STB;1	1.
DPDRV.STB;1	1.
DRDRV.STB;1	1.
DUDRV.STB;1	2.
DXDRV.STB;1	1.
DYDRV.STB;1	1.
LPDRV.STB;1	1.
MMDRV.STB;1	1.
MSDRV.STB;1	1.
MTDRV.STB;1	1.
RSX11M.STB;1	12.
RSX11M.SYS;1	258.

RL01/02 RSXM35 (Cont.)

UIC [1,54]

ACO.TSK;1	39.
ACS.TSK;1	14.
BOO.TSK;1	33.
DBDRV.TSK;1	5.
DDDRV.TSK;1	6.
DKDRV.TSK;1	4.
DLDRV.TSK;1	4.
DMDRV.TSK;1	5.
DMO.TSK;1	15.
DPDRV.TSK;1	3.
DRDRV.TSK;1	5.
DUDRV.TSK;1	11.
DXDRV.TSK;1	4.
DYDRV.TSK;1	5.
EDI.TSK;1	61.
FCPSML.TSK;1	96.
FLX.TSK;1	132.
ICP.TSK;1	141.
INI.TSK;1	58.
INS.TSK;1	60.
LBR.TSK;1	72.
LOA.TSK;1	29.
LPDRV.TSK;1	4.
MAC.TSK;1	89.
MCR.TSK;1	113.
MMDRV.TSK;1	7.
MOU.TSK;1	46.
MSDRV.TSK;1	7.
MTDRV.TSK;1	6.
PIP.TSK;1	73.
RCT.TSK;1	11.
SAV.TSK;1	77.
SLP.TSK;1	48.
TKB.TSK;1	176.
TKN.TSK;1	18.
UFD.TSK;1	8.
UNL.TSK;1	23.
VMR.TSK;1	156.

Total of 1979./1979. blocks in 56. files

UFD [1,60]

Total of 0./0. blocks in 0. files

UFD [1,64]

Total of 0./0. blocks in 0. files

UFD [11,10]

ICDRV.MAC;1	179.
IPDRV.MAC;1	255.
ISDRV.MAC;1	32.
TTATT.MAC;1	73.
TTCAN.MAC;1	27.
TTCIS.MAC;1	19.
TTDAT.MAC;1	90.
TTDRV.MAC;1	262.
TTFP.MAC;1	15.
TTICH.MAC;1	122.
TTINI.MAC;1	35.
TTJZ.MAC;1	7.
TTMAC.MAC;1	15.
TTMIS.MAC;1	7.
TTMOD.MAC;1	20.
TTODN.MAC;1	18.
TTOIS.MAC;1	14.
TTRW.MAC;1	83.
TTSUB.MAC;1	41.
TTTBL.MAC;1	20.
TTYH.MAC;1	35.
TTYHV.MAC;1	28.
TTYJ.MAC;1	6.
TTYL.MAC;1	16.
TTYZ.MAC;1	17.

Total of 1436./1436. blocks in 25. files

UFD [11,20]

Total of 0./0. blocks in 0. files

UFD [11,24]

Total of 0./0. blocks in 0. files

UFD [11,40]

Total of 0./0. blocks in 0. files

UFD [12,20]

Total of 0./0. blocks in 0. files

RL01/02 RSXM35 (Cont.)

UFD [12,24]

Total of 0./0. blocks in 0. files

UFD [200,200]

BLDLAINIT.CMD;1	14.
SGNBLDDRV.CMD;1	20.
SGNKLAB.CMD;1	70.
SGNSTAND.CMD;1	4.
SYSGEN.CMD;1	77.
SYSGEN2.CMD;1	78.
SYSGEN3.CMD;1	54.

Total of 317./317. blocks in 7. files

Grand total of 4402./4402. blocks in 99. files in 21. directories

F.3.2 EXCPRV

UFD [1,1]

KMCLP.BIN;1	6.
FCSMTA.OBJ;1	30.
LPA.OBJ;1	16.
LPS.OBJ;1	5.
PURICR.OBJ;1	6.
PURISA.OBJ;1	8.
PURPCS.OBJ;1	14.
PURUDC.OBJ;1	3.

Total of 88./88. blocks in 8. files

UFD [1,20]

ACNBLD.BLD;1	5.
ACSBLD.BLD;1	2.
BOOBLD.BLD;1	5.
BROBLD.BLD;1	2.
BYEBLD.BLD;1	2.
COTBLD.BLD;1	4.
DCLBLD.BLD;1	21.
DMOBLD.BLD;1	3.
ELIBLD.BLD;1	4.
ERLBLD.BLD;1	5.
FCPLRGBLD.BLD;1	9.
FCPMDLBLD.BLD;1	17.
FCPMINBLD.BLD;1	17.
FCPSMLBLD.BLD;1	11.
FCSRS1BLD.BLD;1	10.
F11MSGBLD.BLD;1	3.
HELBLD.BLD;1	8.
ICPBLD.BLD;1	8.
ICPCOMBLD.BLD;1	21.
ICQBLD.BLD;1	9.
INIBLD.BLD;1	7.
INSBLD.BLD;1	3.
LOABLD.BLD;1	4.
LPIBLD.BLD;1	2.
LPPBLD.BLD;1	11.
MCMBLD.BLD;1	9.
MCRBLD.BLD;1	18.
MOUBLD.BLD;1	4.
MTABLD.BLD;1	17.
PMDBLD.BLD;1	10.
PMTBLD.BLD;1	8.
PRTBLD.BLD;1	9.
QCLBLD.BLD;1	8.
QMGBLD.BLD;1	9.
QPRBLD.BLD;1	2.
RCTBLD.BLD;1	2.
RMDBLD.BLD;1	15.
SAVBLD.BLD;1	14.

RL01/02 EXCPRV (Cont.)

UIC [1,20]

SHFBLD.BLD;1	2.
SHUBLD.BLD;1	2.
TDXBLD.BLD;1	2.
TKNBLD.BLD;1	2.
UFDBLD.BLD;1	2.
UNLBLD.BLD;1	2.
ICBLD.CMD;1	1.
IPBLD.CMD;1	1.
ISBLD.CMD;1	1.
UDCBLD.CMD;1	1.
LPINIT.OBJ;1	4.
SYSROT.OBJ;1	1.
BOO.OLB;1	11.
DCLO.OLB;1	493.
DCLR.OLB;1	54.
ERL.OLB;1	35.
FCP.OLB;1	87.
FIL.OLB;1	124.
F11MSG.OLB;1	9.
ICP11M.OLB;1	120.
INI.OLB;1	84.
INS.OLB;1	35.
LAINIT.OLB;1	21.
LOA.OLB;1	43.
MCR.OLB;1	193.
MLTUSR.OLB;1	81.
MTA.OLB;1	102.
PIPUTL.OLB;1	25.
PMD.OLB;1	32.
PRT.OLB;1	19.
RMD.OLB;1	70.
SAV.OLB;1	65.

Total of 2042./2047. blocks in 70. files

UFD [1,24]

ICBLD.CMD;1	1.
IPBLD.CMD;1	1.
ISBLD.CMD;1	1.
UDCBLD.CMD;1	1.
LPINIT.OBJ;1	4.
SHUFL.OBJ;1	4.
SYSROT.OBJ;1	1.
TDX.OBJ;1	12.
BOO.OLB;1	11.
COT.OLB;1	26.
ERL.OLB;1	35.
FCP.OLB;1	92.
FIL.OLB;1	124.
ICP11M.OLB;1	120.
INI.OLB;1	84.
INS.OLB;1	37.

RL01/02 EXCPRV (Cont.)

UIC [1,24]

LAINIT.OLB;1	21.
LOA.OLB;1	47.
LPP.OLB;1	57.
MCR.OLB;1	211.
MLTUSR.OLB;1	81.
MTA.OLB;1	102.
PIPUTL.OLB;1	25.
PMD.OLB;1	33.
QMG.OLB;1	74.
QMGCLI.CLB;1	89.
RCT.OLB;1	17.
RMD.OLB;1	98.
SAV.OLB;1	69.

Total of 1478./1482. blocks in 29. files

UFD [1,30]

Total of 0./0. blocks in 0. files

UFD [1,34]

Total of 0./0. blocks in 0. files

UFD [11,10]

ADDRV.MAC;1	10.
AFDRV.MAC;1	17.
ARDRV.MAC;1	61.
BFCTL.MAC;1	18.
CODRV.MAC;1	9.
CORAL.MAC;1	28.
CRASH.MAC;1	99.
CRDRV.MAC;1	36.
CTDRV.MAC;1	19.
CVRTM.MAC;1	5.
DBDRV.MAC;1	49.
DDDRV.MAC;1	71.
DFDRV.MAC;1	21.
DKDRV.MAC;1	23.
DLDRV.MAC;1	51.
DMDRV.MAC;1	71.
DPDRV.MAC;1	26.
DRABO.MAC;1	4.
DRASG.MAC;1	10.
DRATP.MAC;1	12.
DRATX.MAC;1	9.
DRCIN.MAC;1	21.

RL01/02 EXCPRV (Cont.)

UIC [11,10]

DRCLI.MAC;1	33.
DRCMT.MAC;1	7.
DRDAR.MAC;1	6.
DRDCP.MAC;1	8.
DRDRV.MAC;1	62.
DRDSP.MAC;1	47.
DREIF.MAC;1	43.
DREXP.MAC;1	17.
DRGCL.MAC;1	36.
DRGEF.MAC;1	19.
DRGIN.MAC;1	1.
DRGLI.MAC;1	6.
DRGPP.MAC;1	11.
DRGSS.MAC;1	3.
DRGTK.MAC;1	7.
DRGTP.MAC;1	16.
DRMAP.MAC;1	58.
DRMKT.MAC;1	11.
DRPUT.MAC;1	22.
DRQIO.MAC;1	75.
DRRAS.MAC;1	15.
DRREG.MAC;1	37.
DRREQ.MAC;1	5.
DRRES.MAC;1	12.
DRSED.MAC;1	26.
DRSMG.MAC;1	13.
DRSPW.MAC;1	85.
DRSST.MAC;1	9.
DRSUB.MAC;1	36.
DRSWS.MAC;1	7.
DSDRV.MAC;1	22.
DSSDI.MAC;1	7.
DTDRV.MAC;1	23.
DUDRV.MAC;1	227.
DXDRV.MAC;1	36.
DYDRV.MAC;1	50.
EMDRV.MAC;1	20.
ERROR.MAC;1	74.
ERSUB.MAC;1	40.
EXDBT.MAC;1	87.
EXESB.MAC;1	29.
GRDRV.MAC;1	49.
ICOM.MAC;1	4.
INITL.MAC;1	33.
IOSUB.MAC;1	53.
IPCOM.MAC;1	2.
IPMAP.MAC;1	2.
ISCOM.MAC;1	2.
LADRV.MAC;1	90.
LKDRV.MAC;1	33.
LOADR.MAC;1	54.
LOWCR.MAC;1	6.
LPDRV.MAC;1	24.
LSDRV.MAC;1	74.
MDSUB.MAC;1	43.

UIC [11,10]

MEMAP.MAC;1	39.
MFDRV.MAC;1	124.
MMDRV.MAC;1	81.
MSDRV.MAC;1	97.
MTDRV.MAC;1	59.
NLDRV.MAC;1	4.
NTDRV.MAC;1	6.
PANIC.MAC;1	16.
PARTY.MAC;1	21.
PLSUB.MAC;1	16.
PMT.MAC;1	81.
POWER.MAC;1	24.
PPDRV.MAC;1	14.
PRDRV.MAC;1	12.
QUEUE.MAC;1	22.
REQSB.MAC;1	105.
RSXMC0.MAC;1	9.
SSTSR.MAC;1	31.
SYSCM.MAC;1	37.
SYSDF.MAC;1	10.
SYSXT.MAC;1	99.
SYTAB.MAC;1	11.
TDSCH.MAC;1	20.
UDCOM.MAC;1	7.
UDDRV.MAC;1	54.
XBDRV.MAC;1	29.
XLDRV.MAC;1	28.
XMDRV.MAC;1	66.
XPDRV.MAC;1	25.
XQDRV.MAC;1	41.
XUDRV.MAC;1	27.
XWDRV.MAC;1	27.

Total of 3729./3729. blocks in 109. files

UFD [11,20]

Total of 0./0. blocks in 0. files

UFD [11,24]

Total of 0./0. blocks in 0. files

UFD [11,40]

Total of 0./0. blocks in 0. files

RL01/02 EXCPRV (Cont.)

UFD [12,10]

DV2OV.MAC;1	52.
SPSOV.MAC;1	62.
STSUB.MAC;1	16.
SX1OV.MAC;1	42.
SX2OV.MAC;1	52.
SX3OV.MAC;1	18.
SX4OV.MAC;1	40.

Total of 282./282. blocks in 7. files

UFD [12,20]

Total of 0./0. blocks in 0. files

UFD [12,24]

Total of 0./0. blocks in 0. files

UFD [12,40]

Total of 0./0. blocks in 0. files

UFD [200,200]

SGNEXEC.CMD;1	175.
SGNIC1S.CMD;1	45.
SGNIP.CMD;1	29.
SGNPER.CMD;1	184.
SGNTT.CMD;1	42.

Total of 475./475. blocks in 5. files

Grand total of 8094./8103. blocks in 228. files in 14. directories

F.3.3 RLUTIL

UFD [1,20]

ACFBLD.BLD;1	2.
ACOBLD.BLD;1	2.
BADBLD.BLD;1	2.
BRUBLD.BLD;1	3.
CDABLD.BLD;1	20.
CFLBLD.BLD;1	9.
CMPBLD.BLD;1	6.
CRFBLD.BLD;1	13.
DMPBLD.BLD;1	9.
DSCBLD.BLD;1	7.
EDIBLD.BLD;1	8.
EDTBLD.BLD;1	5.
FLXBLD.BLD;1	18.
FMTBLD.BLD;1	3.
FTBBLD.BLD;1	5.
IOXBLD.BLD;1	22.
LBRBLD.BLD;1	24.
MACBLD.BLD;1	16.
PATBLD.BLD;1	8.
PIPBLD.BLD;1	24.
RPTBLD.BLD;1	14.
SLPBLD.BLD;1	7.
STKBLD.BLD;1	28.
TKBBLD.BLD;1	31.
VFYBLD.BLD;1	9.
VMRBLD.BLD;1	12.
ZAPBLD.BLD;1	4.
BAD.OLB;1	3[illegible]
BRU.OLB;1	279.
CDA.OLB;1	144.
CMP.OLB;1	26.
CRF.OLB;1	40.
DMP.OLB;1	39.
DSC.OLB;1	164.
EDI.OLB;1	57.
EDTLIB.OLB;1	184.
FLX.OLB;1	142.
FMT.OLB;1	55.
FTB.OLB;1	105.
IOX.OLB;1	127.
LBR.OLB;1	70.
MAC.OLB;1	149.
NEISLB.OLB;1	14.
PAT.OLB;1	34.
PIP.OLB;1	96.
PIPUTL.OLB;1	25.
RPT.OLB;1	222.
SLP.OLB;1	34.
TKB.OLB;1	308.
VFY.OLB;1	53.
VMR.OLB;1	226.
ZAP.OLB;1	33.

Total of 2973./3028. blocks in 52. files

RL01/02 RLUTIL (Cont.)

UFD [1,24]

ACF.OLB;1 31.

Total of 31./31. blocks in 1. file

UFD [1,30]

Total of 0./0. blocks in 0. files

UFD [1,34]

Total of 0./0. blocks in 0. files

UFD [1,50]

Total of 0./0. blocks in 0. files

UFD [1,51]

BRU64K.STB;1 14.
BRU64K.SYS;1 258.

Total of 272./272. blocks in 2. files

UFD [1,54]

Total of 0./0. blocks in 0. files

Grand total of 3784./3839. blocks in 61. files in 7. directories

F.3.4 MCRSRC

UFD [1,1]

RSXMACID.MAC;1	38.
EXEMC.MLB;1	66.
RSXMAC.SML;1	253.

Total of 357./357. blocks in 3. files

UFD [11,10]

Total of 0./0. blocks in 0. files

UFD [12,10]

INDSYS.CLB;1	103.
ABOOV.MAC;1	24.
ACS.MAC;1	23.
ACTFIL.MAC;1	6.
ALLOV.MAC;1	27.
ALLSUB.MAC;1	21.
ALTOV.MAC;1	15.
ASNOV.MAC;1	34.
ATLOV.MAC;1	49.
BOOT.MAC;1	29.
BOOTRC.MAC;1	2.
BOTPH2.MAC;1	19.
BRKOV.MAC;1	3.
BYE.MAC;1	45.
CBTO.MAC;1	7.
CDT2B.MAC;1	6.
CLIOV.MAC;1	76.
CLQOV.MAC;1	19.
COLOG.MAC;1	9.
COT2B.MAC;1	4.
CRETSK.MAC;1	16.
DEAOV.MAC;1	10.
DEVOV.MAC;1	47.
DFSYM.MAC;1	19.
DISMNT.MAC;1	79.
DV2OV.MAC;1	52.
EDCKP.MAC;1	4.
ERMSG.MAC;1	15.
ERRMSG.MAC;1	10.
ERROV.MAC;1	13.
FILBN.MAC;1	20.
FIXOV.MAC;1	30.
FLAOV.MAC;1	19.
FMTDV.MAC;1	4.
FNDUCB.MAC;1	8.
GETNUM.MAC;1	4.

RL01/02 MCRSRC (Cont.)

UIC [12,10]

GNBLK.MAC;1	5.
GTBYT.MAC;1	6.
GTMNM.MAC;1	4.
GTTSK.MAC;1	8.
HELLO.MAC;1	146.
ICBDEF.MAC;1	5.
ICPASK.MAC;1	6.
ICPASV.MAC;1	14.
ICPAS1.MAC;1	12.
ICPAS2.MAC;1	10.
ICPAS3.MAC;1	11.
ICPAS4.MAC;1	9.
ICPAS5.MAC;1	7.
ICPATS.MAC;1	11.
ICPBLK.MAC;1	8.
ICPCHA.MAC;1	5.
ICPCHN.MAC;1	9.
ICPENB.MAC;1	16.
ICPERA.MAC;1	5.
ICPERR.MAC;1	18.
ICPEXF.MAC;1	14.
ICPEXI.MAC;1	7.
ICPFCL.MAC;1	7.
ICPFDC.MAC;1	11.
ICPFEX.MAC;1	4.
ICPFIL.MAC;1	2.
ICPFMI.MAC;1	2.
ICPFMO.MAC;1	2.
ICPFMS.MAC;1	27.
ICPFMX.MAC;1	4.
ICPFOP.MAC;1	18.
ICPFUT.MAC;1	22.
ICPF10.MAC;1	2.
ICPF52.MAC;1	1.
ICPGNB.MAC;1	6.
ICPGOT.MAC;1	14.
ICPGTK.MAC;1	13.
ICPGTN.MAC;1	4.
ICPIF1.MAC;1	9.
ICPIF2.MAC;1	6.
ICPIF3.MAC;1	8.
ICPIF4.MAC;1	8.
ICPIMP.MAC;1	30.
ICPINX.MAC;1	6.
ICPIN2.MAC;1	8.
ICPIN3.MAC;1	15.
ICPIN4.MAC;1	18.
ICPIN5.MAC;1	6.
ICPMCR.MAC;1	7.
ICPMEM.MAC;1	5.
ICPMEN.MAC;1	2.
ICPNEC.MAC;1	1.
ICPNEI.MAC;1	1.
ICPNEN.MAC;1	2.
ICPNET.MAC;1	14.
ICPNEX.MAC;1	3.

RL01/02 MCRSRC (Cont.)

UIC [12.10]

ICPNPR.MAC;1	1.
ICPNP1.MAC;1	5.
ICPONR.MAC;1	24.
ICPPAR.MAC;1	15.
ICPPDW.MAC;1	14.
ICPPOP.MAC;1	11.
ICPPO1.MAC;1	8.
ICPPRC.MAC;1	13.
ICPPRE.MAC;1	29.
ICPPRS.MAC;1	6.
ICPROT.MAC;1	28.
ICPSET.MAC;1	6.
ICPSTP.MAC;1	3.
ICPSUB.MAC;1	28.
ICPSUT.MAC;1	5.
ICPSU1.MAC;1	20.
ICPSU2.MAC;1	19.
ICPSU3.MAC;1	18.
ICPSU4.MAC;1	8.
ICPSU5.MAC;1	4.
ICPSU6.MAC;1	5.
ICPSYC.MAC;1	14.
ICPSYT.MAC;1	25.
ICPSY1.MAC;1	26.
ICPSY2.MAC;1	8.
ICPSY3.MAC;1	12.
ICPTDV.MAC;1	19.
ICPTES.MAC;1	11.
ICPTPA.MAC;1	7.
ICPVEC.MAC;1	2.
ICPWFT.MAC;1	10.
ICPXMD.MAC;1	4.
INIALL.MAC;1	23.
INIBAD.MAC;1	55.
INIBIT.MAC;1	35.
INIGCL.MAC;1	69.
INIHOM.MAC;1	23.
INIMAG.MAC;1	42.
ININDX.MAC;1	38.
INIPAR.MAC;1	119.
INIROT.MAC;1	64.
INIUPD.MAC;1	41.
INSBF.MAC;1	6.
INSCM.MAC;1	10.
INSFL.MAC;1	17.
INSFSR.MAC;1	2.
INSGC.MAC;1	2.
INSHD.MAC;1	30.
INSLB.MAC;1	72.
INSPS.MAC;1	26.
INSROT.MAC;1	19.
IODAT.MAC;1	7.
KEYWD.MAC;1	5.
LDBUF.MAC;1	6.
LDCTL.MAC;1	27.
LDDRV.MAC;1	26.

RL01/02 MCRSRC (Cont.)

UIC [12,10]

LDFIL.MAC;1	8.
LDFIN.MAC;1	33.
LDLDB.MAC;1	22.
LDUIC.MAC;1	3.
LKLST.MAC;1	7.
LN1OV.MAC;1	9.
LUNOV.MAC;1	13.
MCRDEF.MAC;1	5.
MCRDIS.MAC;1	79.
MCROOT.MAC;1	10.
MCROV.MAC;1	59.
MDPOV.MAC;1	10.
MGCML.MAC;1	35.
MOUCLS.MAC;1	20.
MOUDAT.MAC;1	18.
MOUDIS.MAC;1	32.
MOUDSK.MAC;1	26.
MOUFOR.MAC;1	30.
MOUMSG.MAC;1	16.
MOUPAR.MAC;1	43.
MOUPRE.MAC;1	4.
MOUROT.MAC;1	9.
MOUSUB.MAC;1	52.
MOUTAP.MAC;1	38.
MSGOUT.MAC;1	12.
NETSUB.MAC;1	2.
OPEOV.MAC;1	62.
PAROV.MAC;1	24.
PR1OV.MAC;1	8.
RAPOV.MAC;1	14.
REAOV.MAC;1	7.
REDOV.MAC;1	12.
REQCOT.MAC;1	11.
RPSOV.MAC;1	28.
RUNOV.MAC;1	26.
SAVBOT.MAC;1	17.
SAVCPU.MAC;1	13.
SAVC1.MAC;1	20.
SAVC2.MAC;1	17.
SAVC3.MAC;1	6.
SAVDB.MAC;1	14.
SAVDF.MAC;1	12.
SAVDK.MAC;1	13.
SAVDL.MAC;1	18.
SAVDM.MAC;1	15.
SAVDP.MAC;1	14.
SAVDR.MAC;1	19.
SAVDRT.MAC;1	4.
SAVDS.MAC;1	12.
SAVDT.MAC;1	13.
SAVDU.MAC;1	28.
SAVDX.MAC;1	19.
SAVDY.MAC;1	18.
SAVE.MAC;1	62.
SAVEM.MAC;1	12.
SAVFN.MAC;1	16.

RL01/02 MCRSRC (Cont.)

UIC [12,10]

SAVINS.MAC;1	66.
SAVSIZ.MAC;1	26.
SAVST.MAC;1	14.
SAVSUB.MAC;1	35.
SAVTRC.MAC;1	2.
SMLGCL.MAC;1	15.
SPSOV.MAC;1	62.
SRTOV.MAC;1	27.
SSMOV.MAC;1	4.
STSUB.MAC;1	16.
ST1OV.MAC;1	35.
ST2OV.MAC;1	41.
ST3OV.MAC;1	41.
ST4OV.MAC;1	29.
SX1OV.MAC;1	42.
SX2OV.MAC;1	52.
SX3OV.MAC;1	18.
SX4OV.MAC;1	40.
SYMTB.MAC;1	14.
SYSOV.MAC;1	23.
SYSROT.MAC;1	10.
TASOV.MAC;1	36.
TIMOV.MAC;1	26.
TISUBS.MAC;1	4.
TKTN.MAC;1	49.
TPARS2.MAC;1	44.
TPDEB.MAC;1	5.
TPMAC2.MAC;1	32.
TPNUMB.MAC;1	8.
UFD.MAC;1	23.
UFDPAR.MAC;1	16.
UFDPTB.MAC;1	7.
UFDTP.MAC;1	6.
UNLCTL.MAC;1	29.
UNLFIL.MAC;1	6.
WRTMS.MAC;1	6.

Total of 4725./4731. blocks in 240. files

UFD [12,20]

FILASM.CMD;1	4.
FILLIBBLD.CMD;1	1.
ICPASM.CMD;1	12.
ICPLIBBLD.CMD;1	2.
INIASM.CMD;1	2.
INILIBBLD.CMD;1	1.
LOAASM.CMD;1	2.
MCRASM.CMD;1	14.
MCRLIBBLD.CMD;1	3.

Total of 41./41. blocks in 9. files

RL01/02 MCRSRC (Cont.)

UIC [12,24]

FILASM.CMD;1	4.
FILLIBBLD.CMD;1	1.
ICPASM.CMD;1	12.
ICPLIBBLD.CMD;1	2.
INIASM.CMD;1	2.
INILIBBLD.CMD;1	1.
LOAASM.CMD;1	2.
MCRASM.CMD;1	14.
MCRLIBBLD.CMD;1	3.

Total of 41./41. blocks in 9. files

UFD [12,30]

Total of 0./0. blocks in 0. files

UFD [12,34]

Total of 0./0. blocks in 0. files

UFD [12,40]

Total of 0./0. blocks in 0. files

UFD [14,10]

ATCMD.MAC;1	10.
ATCOM.MAC;1	4.
ATINIT.MAC;1	7.
ATPAGE.MAC;1	29.
GBCMD.MAC;1	2.
GBCOM.MAC;1	2.
GBINIT.MAC;1	1.
GBLATM.MAC;1	3.
GBLCHA.MAC;1	3.
GBLGBM.MAC;1	1.
GBLHLM.MAC;1	1.
GBLIOM.MAC;1	3.
GBLMDM.MAC;1	4.
GBLSSM.MAC;1	5.
GBLTHM.MAC;1	5.
GBPAGE.MAC;1	1.
HLCOM.MAC;1	1.
HLINIT.MAC;1	5.
HLPAGE.MAC;1	1.

RL01/02 MCRSRC (Cont.)

UIC [14,10]

IOCMD.MAC;1	6.
IOCOM.MAC;1	3.
IOINIT.MAC;1	11.
IOPAGE.MAC;1	33.
L36ATM.MAC;1	4.
L36CHA.MAC;1	2.
L36HLM.MAC;1	2.
L36MDM.MAC;1	5.
L36SSM.MAC;1	5.
L36THM.MAC;1	6.
MDCMD.MAC;1	6.
MDCOM.MAC;1	7.
MDINIT.MAC;1	25.
MDPAGE.MAC;1	57.
NUL11S.MAC;1	1.
REMAP.MAC;1	3.
RMDDEF.MAC;1	6.
RMDEMO.MAC;1	48.
RMDMAC.MAC;1	7.
RMDRIV.MAC;1	17.
RMDXCM.MAC;1	5.
SSCMD.MAC;1	3.
SSCOM.MAC;1	2.
SSINIT.MAC;1	6.
SSPAGE.MAC;1	30.
TERMID.MAC;1	8.
THCMD.MAC;1	6.
THCOM.MAC;1	6.
THF11L.MAC;1	15.
THINIT.MAC;1	13.
THPAGE.MAC;1	56.
V05ATM.MAC;1	4.
V05CHA.MAC;1	3.
V05HLM.MAC;1	2.
V05IOM.MAC;1	5.
V05MDM.MAC;1	5.
V1HATM.MAC;1	4.
V1HCHA.MAC;1	3.
V1HHLM.MAC;1	2.
V1HIOM.MAC;1	5.
V1HMDM.MAC;1	5.
V1HSSM.MAC;1	5.
V1HTHM.MAC;1	6.
V50ATM.MAC;1	4.
V50CHA.MAC;1	2.
V50HLM.MAC;1	2.
V50IOM.MAC;1	5.
V50MDM.MAC;1	5.
V50THM.MAC;1	6.
V52ATM.MAC;1	4.
V52CHA.MAC;1	2.
V52HLM.MAC;1	2.
V52IOM.MAC;1	5.
V52MDM.MAC;1	5.
V52SSM.MAC;1	5.
V52THM.MAC;1	6.

Total of 594./594. blocks in 75. files

RL01/02 MCRSRC (Cont.)

UIC [14,20]

RMDASM.CMD;1	8.

Total of 8./8. blocks in 1. file

UFD [14,24]

RMDASM.CMD;1	11.

Total of 11./11. blocks in 1. file

UFD [14,30]

Total of 0./0. blocks in 0. files

UFD [14,34]

Total of 0./0. blocks in 0. files

UFD [14,40]

Total of 0./0. blocks in 0. files

UFD [15,10]

ACNT.MAC;1	162.
BROAD.MAC;1	61.
HELLO.MAC;1	129.
HELROT.MAC;1	13.
HLP.MAC;1	8.
HLPSUB.MAC;1	78.
HSTTAB.MAC;1	23.
SHUFL.MAC;1	36.
SHUTUP.MAC;1	57.

Total of 567./567. blocks in 9. files

RL01/02 MCRSRC (Cont.)

UIC [15,20]

```
MLTASM.CMD;1                1.
MLTLIBBLD.CMD;1             1.
SHUTUPASM.CMD;1             1.

Total of 3./3.  blocks in 3.  files
```

UFD [15,24]

```
MLTASM.CMD;1                1.
MLTLIBBLD.CMD;1             1.
SHUFLASM.CMD;1              1.
SHUTUPASM.CMD;1             1.

Total of 4./4.  blocks in 4.  files
```

UFD [15,30]

```
Total of 0./0.  blocks in 0.  files
```

UFD [15,34]

```
Total of 0./0.  blocks in 0.  files
```

UFD [15,40]

```
Total of 0./0.  blocks in 0.  files

Grand total of 6351./6357.  blocks in 354.  files in 20.  directories
```

RL01/02 HLPDCL

F.3.5 HLPDCL

UFD [1,1]

EXEMC.MLB;1	66.
FCS.OBJ;1	24.
FCSMBF.OBJ;1	32.
EXELIB.OLB;1	45.
SYSLIB.OLB;1	230.
RSXMAC.SML;1	253.

Total of 650./650. blocks in 6. files

UFD [1,2]

HELP.ULB;1	2253.

Total of 2253./2253. blocks in 1. file

UFD [1,6]

ERRLOG.ULB;1	622.
ERRLOGETC.ULB;1	70.

Total of 692./692. blocks in 2. files

UFD [2,300]

FILE1.;1	1.
FILE2.;1	1.
CMP.CMD;1	2.
CONALL.CMD;1	7.
CONCNT.CMD;1	2.
DMP.CMD;1	1.
DSC.CMD;1	6.
FLX.CMD;1	3.
INSTSK.CMD;1	1.
INTERA.CMD;1	4.
LBR.CMD;1	2.
LOAD.CMD;1	10.
MCRTST.CMD;1	6.
PAT.CMD;1	2.
PMD.CMD;1	5.
SIOE.CMD;1	9.
SLP.CMD;1	2.
SLPCMD.CMD;1	1.
STRTUP.CMD;1	10.
UETP.CMD;1	25.
UNLOAD.CMD;1	2.
UTIL.CMD;1	1.
CRTEST.MAC;1	1.

RL01/02 HLPDCL (Cont.)

UIC [2,300]

DEFINE.MAC;1	49.
DUMMY.MAC;1	1.
LOGGER.MAC;1	26.
MACRO1.MAC;1	1.
MACRO2.MAC;1	1.
MACRO3.MAC;1	1.
NUL1.MAC;1	19.
NUL2.MAC;1	19.
NUL3.MAC;1	19.
OBJCT1.MAC;1	1.
OBJCT2.MAC;1	1.
OBJCT3.MAC;1	1.
PATCH1.MAC;1	1.
QTRUN.MAC;1	28.
PATCH1.OBJ;1	1.
DEVM.SAM;1	3.
UETPCOR.TMP;1	18.
ASRC.XXX;1	1.
PATCHD.XXX;1	1.
SLPDAT.XXX;1	1.
SLPOUT.XXX;1	3.

Total of 300./300. blocks in 44. files

UFD [23,10]

ABORT.MAC;1	4.
ALFN.MAC;1	10.
ALFNUM.MAC;1	13.
ALL.MAC;1	5.
ALLOCATE.MAC;1	3.
AND.MAC;1	9.
ANDA.MAC;1	4.
APPEND.MAC;1	3.
ASSIGN.MAC;1	6.
ASTOV.MAC;1	6.
AT.MAC;1	2.
BACKUP.MAC;1	13.
BASIC.MAC;1	3.
BROADCAST.MAC;1	4.
CALLOV.MAC;1	7.
CANCEL.MAC;1	2.
CATCHALL.MAC;1	5.
CBM.MAC;1	3.
COBOL.MAC;1	21.
COD.MAC;1	3.
COMMAC.MAC;1	1.
COMMAND.MAC;1	10.
CONTINUE.MAC;1	2.
CONVERT.MAC;1	7.
COP.MAC;1	3.
COPY.MAC;1	4.
CORAL.MAC;1	15.

RL01/02 HLPDCL (Cont.)

UIC [23,10]

CREATE.MAC;1	4.
CSEP.MAC;1	2.
CUIC.MAC;1	3.
DATE.MAC;1	4.
DBUG.MAC;1	10.
DCL.MAC;1	2.
DCLDAT.MAC;1	22.
DCLMAC.MAC;1	56.
DCLMPL.MAC;1	1.
DEALLO.MAC;1	3.
DEASSIGN.MAC;1	4.
DEBUG.MAC;1	2.
DELETE.MAC;1	7.
DEV.MAC;1	2.
DIFFERENC.MAC;1	5.
DIRECTORY.MAC;1	5.
DISMOUNT.MAC;1	4.
DISPATCH.MAC;1	3.
DQBFE.MAC;1	10.
DQBFS.MAC;1	4.
DSPCMD.MAC;1	28.
EDIT.MAC;1	12.
EDOC.MAC;1	2.
ELEMENT.MAC;1	22.
EOL.MAC;1	3.
ERR.MAC;1	11.
ERRORO.MAC;1	5.
ERRORR.MAC;1	2.
ERR1.MAC;1	3.
FIL.MAC;1	3.
FIX.MAC;1	3.
FLAGS.MAC;1	4.
FNAM.MAC;1	6.
FORMAT.MAC;1	9.
FORTRAN.MAC;1	17.
FSEP.MAC;1	2.
GTARG.MAC;1	5.
HELP.MAC;1	4.
HOLD.MAC;1	3.
IFIL.MAC;1	2.
INITIAL.MAC;1	16.
INSTALL.MAC;1	6.
JSR.MAC;1	3.
LAB.MAC;1	2.
LDCCD.MAC;1	5.
LIBRARY.MAC;1	12.
LINK.MAC;1	16.
LINK1.MAC;1	6.
LIT.MAC;1	17.
LOAD.MAC;1	5.
LOGIN.MAC;1	2.
LOGOUT.MAC;1	2.
LOVR.MAC;1	12.
LUIC.MAC;1	3.
MACRO.MAC;1	18.
MAP.MAC;1	24.

RL01/02 HLPDCL (Cont.)

UIC [23,10]

MATCH.MAC;1	7.
MCR.MAC;1	2.
MOUNT.MAC;1	14.
NEW.MAC;1	4.
NFIL.MAC;1	3.
NFT.MAC;1	3.
NLIT.MAC;1	3.
NOD.MAC;1	2.
ODEV.MAC;1	2.
OR.MAC;1	6.
OUIC.MAC;1	2.
PARSER.MAC;1	7.
PASCAL.MAC;1	7.
PIP.MAC;1	7.
PREPARSE.MAC;1	14.
PRI.MAC;1	2.
PRINT.MAC;1	11.
PRO.MAC;1	9.
PROC.MAC;1	2.
PURGE.MAC;1	3.
QIOBF.MAC;1	8.
QUA.MAC;1	7.
RELEASE.MAC;1	3.
REMOVE.MAC;1	2.
RENAME.MAC;1	3.
REQUEST.MAC;1	2.
RUN.MAC;1	7.
SCTBIT.MAC;1	7.
SEP.MAC;1	2.
SET.MAC;1	15.
SET1.MAC;1	21.
SHOW.MAC;1	21.
SORT.MAC;1	10.
SPAWN.MAC;1	5.
START.MAC;1	9.
STOP.MAC;1	8.
SUBMIT.MAC;1	9.
SY.MAC;1	3.
T.MAC;1	2.
TERM.MAC;1	2.
TI.MAC;1	3.
TIME.MAC;1	2.
TLINK.MAC;1	10.
TRANSL.MAC;1	5.
TSET.MAC;1	20.
TSHOW.MAC;1	16.
TST.MAC;1	5.
TYPE.MAC;1	3.
UIC.MAC;1	2.
UND.MAC;1	5.
UNFIX.MAC;1	3.
UNLOCK.MAC;1	3.
VER.MAC;1	2.

RL01/02 HLPDCL (Cont.)

UIC [23,10]

WFIL.MAC;1	2.
WUIC.MAC;1	2.
WVER.MAC;1	2.
WXTN.MAC;1	2.
XCOPY.MAC;1	6.
XDCL.MAC;1	35.
XTN.MAC;1	2.

Total of 1002./1002. blocks in 143. files

UFD [23,24]

DCL.CMD;1	4.
DCLASM.CMD;1	22.

Total of 26./26. blocks in 2. files

UFD [23,34]

Total of 0./0. blocks in 0. files

UFD [23,40]

Total of 0./0. blocks in 0. files

UFD [24,10]

TDX.MAC;1	108.

Total of 108./108. blocks in 1. file

UFD [24,20]

TDXASM.CMD;1	1.

Total of 1./1. blocks in 1. file

RL01/02 HLPDCL (Cont.)

UIC [45,10]

KRATE.B2S;1	7.
KRATE.FTN;1	7.
KAADMP.MAC;1	12.
KAADRV.MAC;1	24.
KAASO3.MAC;1	5.
KADAGR.MAC;1	6.
KADDRV.MAC;1	14.
KADGCH.MAC;1	20.
KADINP.MAC;1	13.
KADIN0.MAC;1	6.
KADIN1.MAC;1	8.
KADIN2.MAC;1	6.
KADIN3.MAC;1	8.
KADIN4.MAC;1	6.
KADIN5.MAC;1	8.
KADSWP.MAC;1	7.
KAST.MAC;1	14.
KBFRMG.MAC;1	13.
KBFSTS.MAC;1	11.
KCLOKA.MAC;1	5.
KCLOKB.MAC;1	10.
KCOMM.MAC;1	5.
KCVADF.MAC;1	6.
KDIGO.MAC;1	10.
KDIO.MAC;1	12.
KDISWP.MAC;1	7.
KDOSWP.MAC;1	7.
KDRDRV.MAC;1	30.
KDSCAD.MAC;1	4.
KDSDGO.MAC;1	4.
KDVDF.MAC;1	11.
KEFQA.MAC;1	10.
KFLT16.MAC;1	6.
KGHIST.MAC;1	21.
KIESTO.MAC;1	4.
KKWDRV.MAC;1	18.
KLQSUB.MAC;1	7.
KMUL.MAC;1	3.
KPAA.MAC;1	7.
KPRE.MAC;1	4.
KRCLKB.MAC;1	5.
KRLOC.MAC;1	4.
KRWBF.MAC;1	12.
KSET.MAC;1	13.
KSTADC.MAC;1	7.
KSTB.MAC;1	7.
KSTIBF.MAC;1	5.
KSTOP.MAC;1	5.
KSUB.MAC;1	10.
KSWDF.MAC;1	13.
LABMAC.MAC;1	6.

Total of 473./473. blocks in 51. files

RL01/02 HLPDCL (Cont.)

UIC [45,20]

ASMK.CMD;1	1.
KCLEAN.CMD;1	1.
KCOMBLD.CMD;1	1.
KLABMLB.CMD;1	1.
KLIBBLD.CMD;1	1.
KLIBRP.CMD;1	1.
K4ASM.CMD;1	1.

Total of 7./7. blocks in 7. files

UFD [45,24]

ASMK.CMD;1	1.
KCLEAN.CMD;1	1.
KCOMBLD.CMD;1	1.
KLABMLB.CMD;1	1.
KLIBBLD.CMD;1	1.
KLIBRP.CMD;1	1.
K4ASM.CMD;1	1.

Total of 7./7. blocks in 7. files

UFD [45,30]

Total of 0./0. blocks in 0. files

UFD [45,34]

Total of 0./0. blocks in 0. files

UFD [104,10]

DEVSM1.CNF;1	28.
DEVUDA.CNF;1	15.
DISPATCH.CNF;1	46.
DSP1M1.CNF;1	40.
DSP2M1.CNF;1	17.
DSP3M1.CNF;1	17.
DSP4M1.CNF;1	15.
DSP5M1.CNF;1	19.
DSP6M1.CNF;1	7.
DSP7M1.CNF;1	27.
EML11.CNF;1	37.
ERK05.CNF;1	29.
ERK67.CNF;1	64.

RL01/02 HLPDCL (Cont.)

UIC [104,10]

ERL12.CNF;1	40.
ERM05.CNF;1	49.
ERM23.CNF;1	49.
ERM80.CNF;1	48.
ERP07.CNF;1	46.
ERP23.CNF;1	31.
ERP456.CNF;1	51.
ERRORM.CNF;1	20.
ERS11.CNF;1	24.
ERS34.CNF;1	36.
ERX01.CNF;1	21.
ERX02.CNF;1	28.
ETA11.CNF;1	16.
ETC11.CNF;1	19.
ETS11.CNF;1	57.
ETU58.CNF;1	26.
ETU77.CNF;1	38.
ET0310.CNF;1	26.
ET1645.CNF;1	38.
EUNKWN.CNF;1	15.
E11XX.CNF;1	30.
E1134.CNF;1	38.
E1144.CNF;1	38.
E1160.CNF;1	36.
E117X.CNF;1	40.
FINLM1.CNF;1	4.
FM1NM1.CNF;1	7.
FM1WM1.CNF;1	7.
FM2CM1.CNF;1	5.
FM3CM1.CNF;1	7.
FM4NM1.CNF;1	27.
FM4WM1.CNF;1	28.
INITM1.CNF;1	9.
MSCPAT.CNF;1	25.
MSCPBD.CNF;1	82.
MSCPEN.CNF;1	81.
MSCPTO.CNF;1	45.
NML11.CNF;1	6.
NRK67.CNF;1	4.
NRM05.CNF;1	5.
NRM23.CNF;1	5.
PARSEM.CNF;1	38.
PARS1M.CNF;1	29.
PARS2M.CNF;1	7.
PARS3M.CNF;1	13.
PRS2AM.CNF;1	33.
PRS2BM.CNF;1	32.
SELTM1.CNF;1	12.

Total of 1732./1732. blocks in 61. files

RL01/02 HLPDCL (Cont.)

UIC [104,20]

```
ERRLOGASM.CMD;1          26.
ERRLOGLIB.CMD;1           3.

Total of 29./29.  blocks in 2.  files
```

UFD [104,30]

```
Total of 0./0.  blocks in 0.  files
```

UFD [104,40]

```
Total of 0./0.  blocks in 0.  files
```

UFD [200,200]

```
FCSRES.MAC;1             11.

Total of 11./11.  blocks in 1.  file

Grand total of 7291./7291.  blocks in 329.  files in 20.  directories
```

F.3.6 RMSV20

UFD [1,1]

R0RMS1.MAC;1	12.
RMSMAC.MLB;1	185.
DAPRLX.ODL;1	2.
DAP11X.ODL;1	6.
RMSRLX.ODL;1	2.
RMS11.ODL;1	85.
RMS11S.ODL;1	4.
RMS11X.ODL;1	6.
RMS12S.ODL;1	4.
RMS12X.ODL;1	6.
RMSDAP.OLB;1	95.
RMSLIB.OLB;1	214.
DAPRES.STB;1	2.
RMSRES.STB;1	3.
DAPRES.TSK;1	40.
RMSRES.TSK;1	87.
RMSRESSUB.TSK;1	48.

Total of 801./806. blocks in 17. files

UFD [1,2]

RMSDES.HLP;1	308.

Total of 308./308. blocks in 1. file

UFD [1,24]

BCKNON.CMD;1	1.
BCKNRN.CMD;1	1.
CNVNON.CMD;1	1.

RL01/02 RMSV20 (Cont.)

UIC [1,24]

CNVNOO.CMD;1	1.
CNVNRN.CMD;1	1.
CNVNRR.CMD;1	1.
DAPRES.CMD;1	1.
DEFNON.CMD;1	1.
DEFNRN.CMD;1	1.
DESNON.CMD;1	1.
DESNRN.CMD;1	1.
DSPNON.CMD;1	1.
DSPNRN.CMD;1	1.
IFLNON.CMD;1	1.
IFLNRN.CMD;1	1.
RMSRES.CMD;1	1.
RSTNON.CMD;1	1.
RSTNRN.CMD;1	1.
BCKNON.ODL;1	8.
BCKNRN.ODL;1	8.
CNVNON.ODL;1	10.
CNVNOO.ODL;1	5.
CNVNRN.ODL;1	5.
CNVNRR.ODL;1	5.
DAPRES.ODL;1	1.
DEFNON.ODL;1	3.
DEFNRN.ODL;1	3.
DESNON.ODL;1	6.
DESNRN.ODL;1	6.
DSPNON.ODL;1	7.
DSPNRN.ODL;1	7.
IFLNON.ODL;1	5.
IFLNRN.ODL;1	3.
RMSDES.ODL;1	9.
RMSODL.ODL;1	24.
RMSRES.ODL;1	11.
RSTNON.ODL;1	11.
RSTNRN.ODL;1	11.
RMSUTL.OLB;1	722.

Total of 888./888. blocks in 39. files

UFD [1,34]

DAPRES.MAP;1	16.
RMSRES.MAP;1	59.
RMSRESSUB.MAP;1	35.

Total of 110./110. blocks in 3. files

RL01/02 RMSV20 (Cont.)

UFD [1,54]

RMSBCK.TSK;1	157.
RMSCNV.TSK;1	167.
RMSDEF.TSK;1	139.
RMSDES.TSK;1	241.
RMSDSP.TSK;1	142.
RMSIFL.TSK;1	136.
RMSRST.TSK;1	177.

Total of 1159./1159. blocks in 7. files

UIC [200,1]

ERASE.MAC;1	8.
GSA.MAC;1	18.
PARSE.MAC;1	9.
RENAME.MAC;1	10.
SEARCH.MAC;1	8.
ERASE.TSK;1	25.
PARSE.TSK;1	22.
RENAME.TSK;1	26.
SEARCH.TSK;1	25.

Total of 151./151. blocks in 9. files

Grand total of 3417./3422. blocks in 76. files in 6. directories

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